



**2001 Annual Groundwater
Monitoring Report**

NL Industries/Taracorp
Superfund Site
Granite City, Illinois

P R E P A R E D F O R

NL Industries/Taracorp
Superfund Site Group

EPA Region 5 Records Ctr.



258748

K7 4/16/02



Infrastructure, buildings, environment, communications

HAND-DELIVERED

U. S. Environmental Protection Agency
77 West Jackson Boulevard, HSRW-6J
Chicago, Illinois 60604-3590

ARCADIS G&M, Inc.
35 East Wacker Drive
Suite 1000
Chicago
Illinois 60601
Tel 312 263 6703
Fax 312 263 7897

Attention: Mr. Brad Bradley and Ms. Sheri Bianchin

ENVIRONMENTAL SERVICES

Subject:
2001 Annual Groundwater Monitoring Report
NL Industries/Taracorp Superfund Site
Granite City, Illinois
ARCADIS Geraghty & Miller Project No. CI001003.0005

Chicago, Illinois
01 April 2002

Dear Mr. Bradley and Ms. Bianchin:

On behalf of the NL Industries/Taracorp Superfund Site Group (the Group),
ARCADIS is hereby submitting two (2) copies of the document entitled, "2001
Annual Groundwater Monitoring Report, NL Industries/Taracorp Superfund Site,
Granite City, Illinois."

Contact:
Jack Kratzmeyer

If you should have any questions regarding this submittal, please do not hesitate to
contact the undersigned.

Extension:
312.425.4114

Sincerely,

ARCADIS G&M, Inc.

A handwritten signature in black ink that reads "Jack Kratzmeyer".

Jack Kratzmeyer
Principal Engineer/Project Manager

A handwritten signature in black ink that reads "Nicholas Valkenburg/KAC".

Nicholas Valkenburg, C.P.G.
Vice President/Project Director

Enclosures (2): 2001 Annual Groundwater Monitoring Report

Copies:

Sandra Bron, IEPA, w/enclosure
Mark Kamilow, AlliedSignal Inc., w/enclosure
Jeffrey Leed, Leed Environmental, Inc., w/enclosure
Matt Love, Exide Corporation, w/enclosure
Dennis Reis, Quarles & Brady, w/enclosure
Richard Thompson, GNB Technologies, Inc., w/enclosure
Greg Vierkant, Lucent Technologies Inc., w/enclosure

Part of a bigger picture

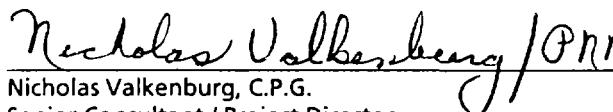
ARCADIS



Kristina Lala
Project Staff Engineer



Jack Kratzmeyer
Principal Engineer / Project Manager



Nicholas Valkenburg, C.P.G.
Senior Consultant / Project Director

**2001 Annual Groundwater
Monitoring Report**

NL Industries/Taracorp
Superfund Site
Granite City, Illinois

Prepared for:
NL Industries/Taracorp
Superfund Site Group

Prepared by:
ARCADIS G&M, Inc.
35 E. Wacker Drive
Suite 1000
Chicago
Illinois 60601
Tel 312 263 6703
Fax 312 263 7897

Our Ref.:
C1001003.0006.00002

Date:
29 March 2002

*This document is intended only for the use
of the individual or entity for which it was
prepared and may contain information that
is privileged, confidential, and exempt from
disclosure under applicable law. Any
dissemination, distribution, or copying of
this document is strictly prohibited.*

1.0 Introduction	1
2.0 Background	3
2.1 Site History	3
2.2 Regional Hydrogeology	3
3.0 Groundwater Investigation	6
3.1 Water Level Measurements	6
3.2 Groundwater Sampling	6
4.0 Results of Chemical Analyses	7
4.1 Main Industrial Site	7
4.2 Remote Fill Areas	8
5.0 Summary of Findings	9
6.0 References	10

Tables

- 1 Groundwater Elevation Data, March 2000 and December 2001.
- 2 Groundwater Analytical Results, March/April 2000 and December 2001.

Figures

- 1 Site Location Map.
- 2 Monitoring Well Locations, Main Industrial Site.
- 3 Monitoring Well Location GMMW 125, Main Industrial Site.
- 4 Monitoring Well Location GMMW 126, Main Industrial Site.
- 5 Monitoring Well Locations, Remote Fill Areas-Eagle Park Acres
- 6 Monitoring Well Locations, Remote Fill Areas-Venice Township.
- 7 Monitoring Well Location GMMW 123, Main Industrial Site.
- 8 Groundwater Elevations and Contours, Main Industrial Site.

Appendix

- A Groundwater Sampling Logs
- B Laboratory Data Reports
- C Data Validation Memorandum

1.0 Introduction

This 2001 Annual Monitoring Report has been prepared by ARCADIS G&M, Inc. (ARCADIS) on behalf of the NL Industries/Taracorp Superfund Site Group (Site Group) to present the results of groundwater monitoring conducted at the NL Industries/Taracorp Superfund Site (Site) in Granite City, Illinois in December 2001.

On September 7, 1999, ARCADIS submitted a work plan to the U.S. EPA on behalf of the Site Group which was entitled "Pre-Design Investigation Work Plan for Groundwater, NL Industries/Taracorp Superfund Site, Granite City, Illinois" (Work Plan). The Work Plan was approved by the U.S. EPA with minor modifications on October 25, 1999, and a final version of the Work Plan was submitted to the agency on August 25, 2000. The purpose of the Pre-Design Investigation was to update the existing groundwater quality database for the Site, as well as determine selected soil and aquifer characteristics. More specifically, ARCADIS designed the Pre-Design Investigation groundwater sampling and analysis program to provide a reproducible set of groundwater quality data using consistent groundwater sampling protocols. In order to determine the effects of sample turbidity on analytical results, groundwater samples were collected using both bailers and low-flow sampling methods. Additionally, laboratory analyses were performed on both filtered and unfiltered samples.

The Pre-Design Investigation concluded the following.

- The relatively low-levels of lead that had been detected in monitoring wells in the former source area at the Main Industrial Site are not mobile in groundwater and have not migrated offsite.
- Comparison of the analytical results for bailer-collected, unfiltered samples to the results for low-flow, unfiltered samples indicates the following: the lead concentrations observed in bailer-collected, unfiltered samples during previous groundwater investigations at the Site are attributable to the presence of suspended solids in the samples, which is directly related to the use of bailers to collect the samples and inadequate well development.

Based on the results of the Pre-Design Investigation, which confirmed the limited extent of groundwater impacts at the Site, it was recommended that the groundwater remedy specified in the Consent Decree be modified to consist of groundwater monitoring only. Accordingly, groundwater monitoring was selected as the final

groundwater remedy in the Explanation of Significant Differences (ESD) issued by the U.S. EPA on September 9, 2000.

The December 2001 groundwater monitoring event was conducted in accordance with the U.S. EPA-approved ARCADIS document, "Groundwater Monitoring Plan, NL Industries/ Taracorp Superfund Site," December 2000 (Monitoring Plan) to achieve the requirements of the September 9, 2000 ESD. As part of the monitoring activities, ARCADIS has also completed a review of existing site conditions, historic groundwater quality data, and the fate and transport mechanisms affecting the Site.

2.0 Background

The following discussion of site history and regional hydrogeology has been excerpted from the Pre-Design Investigation Report for Groundwater (ARCADIS, 2000) and is presented in this report to provide a general understanding of the site background. Details regarding the results of previous groundwater investigations (1982-1995) may be referenced in the Pre-Design Investigation Report for Groundwater.

2.1 Site History

The NL Industries/Taracorp Superfund Site is the location of a former lead-acid battery breaking and secondary lead smelting facility in Granite City, Illinois (Figure 1). Metal refining, fabricating, and associated activities have been conducted at the Site since before the turn of the century with secondary lead smelting conducted since 1903. The Site is located almost entirely within the cities of Granite City, Madison, and Venice, in Madison County, Illinois, approximately two miles east of downtown St. Louis, Missouri. The Site has been divided into three principal areas: the Main Industrial Site, the Adjacent Residential Areas (within the cities of Granite City, Madison, and Venice), and the Remote Fill Areas. The Main Industrial Site is approximately 30 acres in size; the Adjacent Residential Areas consist of approximately 500 acres; and the Remote Fill Areas include locations in Eagle Park Acres and Venice Township [Woodward-Clyde Consultants (WWC), 1995].

Operations ceased at the site in 1983. Lead and cadmium concentrations have been observed in surface soils and groundwater at on-site and off-site locations (IEPA, 1983). The off-site locations at which lead concentrations have been observed include Eagle Park and Venice Township, south of the site, where hard rubber from battery cases was utilized as fill material and/or paving material by private parties and Venice Township. Construction of a multimedia cap over the former Taracorp pile at the main industrial site was completed by the Site Group in 1999. The Site Group also completed remedial activities to address soil contamination in the residential areas and remote fill areas.

2.2 Regional Hydrogeology

The Granite City area is situated within a bedrock valley cut by the Mississippi River (Bergstrom and Walker, 1956). The preglacial bedrock valley has been filled with Recent Alluvium and glacially derived valley-train materials (collectively referred to as the valley fill). The valley fill in the Granite City area varies between approximately

80 and 120 feet thick, with the materials thinning to the west towards Chain of Rocks Canal. The river channel at Chain of Rocks, which is west of the Chain of Rocks Canal, is reported to intersect bedrock (Bergstrom and Walker 1956).

The valley fill includes silts and clays at or near the surface deposited during recession of floodwaters. As is evidenced by Horseshoe Lake, an oxbow type lake, immediately to the east of Granite City, the Mississippi River has migrated over time across the broad bottom lands, which are 6 to 8 miles wide in the Granite City area. The channel migration, the associated cut-and-fill actions, and the flooding have produced complex hydrogenous deposits of varying thickness.

Investigations conducted by the Illinois State Water Survey (Piskin and Bergstrom, 1975) indicate that the sand and sand and gravel deposits below the surficial silts and clays, become coarser with depth. At the base of the valley fill deposits in the Granite City area, 20 to 35 feet of clean sand and gravel are encountered (Bergstrom and Walker, 1956). These deposits become finer to the east and grade into dominantly sand and silt in the Horseshoe Lake area.

Groundwater in the Granite City area occurs in valley fill deposits under water table or leaky artesian conditions, depending upon the extent to which fine- and coarse-grained sediments are interbedded. Locally, portions of the surficial silts and clay may be saturated and would therefore be under water-table conditions. Bedrock while saturated, is generally not considered a significant source of groundwater in the bottomlands area. The bedrock is generally of lower permeability with water being yielded primarily from fractures.

Generally, groundwater flow in the valley fill deposits is from northeast to southwest in the Granite City area. Locally, groundwater pumping and the associated cone of depression, will change the regional groundwater flow pattern. From 1978 to 1980, groundwater level monitoring performed by the Illinois State Water Survey (Collins and Richards, 1986) identified a water-table depression on the west side of Granite City, which appears to be associated with a pumping center.

Groundwater under non-pumping conditions is recharged by rainfall and floods. The Mississippi River is a major groundwater discharge area under normal river stage conditions. Under high flow conditions when the river level is higher than the water table, the Mississippi River will serve as a recharge source for the valley fill aquifer. In situations where high volume pumping is occurring near the river, flow will be from the river toward the pumping center.

The Illinois Water Survey indicates that groundwater usage in the Granite City area is for industrial purposes and that fluctuations in groundwater usage are related to the cyclical nature of the area's steel industry (Collins and Richards 1986). The local water utility district, which serves Granite City and the adjacent communities of Madison and North Venice, indicates that it uses treated Mississippi River water in the area's distribution systems.

3.0 Groundwater Investigation

In accordance with the Monitoring Plan and Remedy selected for the Site, water level measurements and groundwater samples were collected at the monitoring well locations listed in Table 1 and presented in Figures 2 through 7. The 2001 annual groundwater monitoring event was conducted December 10 through December 13, 2001.

3.1 Water Level Measurements

Prior to the initiation of groundwater sampling activities, one round of water level measurements (total well depth and depth-to-water) was collected on December 10, 2001 using an electronic water-level indicator. Water-level data for this event are summarized in Table 1 and presented on Figure 8. Historic groundwater elevation data are also included in Table 1. Site data indicate that groundwater in the surficial aquifer flows to the south-southwest.

3.2 Groundwater Sampling

Groundwater samples were collected according to low-flow sampling procedures specified in the Monitoring Plan. In accordance with the findings of the September 2000 Pre-Design Investigation Report (ARCADIS, 2000), samples were collected using a low-flow sampling pump (versus bailer) and were not filtered in the field.

Prior to actual sampling, the stability of field parameters was verified using a flow-through cell. Field measurements included groundwater pH, turbidity, temperature, conductivity, and oxidation-reduction potential (ORP). Field measurements were recorded on Groundwater Sampling Logs, which are presented in Appendix A.

Upon sample collection, containers were labeled, placed in an iced cooler, and submitted to the project laboratory (STL Savannah Laboratories of Savannah, Georgia) for analysis. Groundwater samples were submitted for analysis of the following Target Analyte List (TAL) metals using U.S. Environmental Protection Agency (U.S. EPA) approved Method 6010 (Test Methods for Evaluating Solid Waste, SW-846, Third Edition): cadmium, lead, and zinc. As required by the Monitoring Plan, the groundwater samples collected from the 29 wells at the Main Industrial Site were submitted for analysis of select parameters (cadmium, lead, and zinc), while the six (6) samples from the Remote Fill Areas were submitted for analysis of lead only.

4.0 Results of Chemical Analyses

Laboratory results for all groundwater samples collected from the NL Industries/Taracorp Site as part of the 2001 annual groundwater monitoring event are summarized in Table 2. For trending and comparison purposes, historic groundwater analytical data (March 2000 and July 2000) are also included in Table 2. Copies of the STL Savannah Laboratories analytical data reports for this event are provided in Appendix B. Analytical results for the groundwater samples are reported in milligrams per liter (mg/L), equivalent to parts per million.

Laboratory data consists of ARCADIS Level II deliverables as specified by the Monitoring Plan. These data were reviewed and validated according to U.S. EPA approved methodologies and data validation guidelines for inorganic parameters. The data validation concluded that the data were found to be of acceptable quality and no data qualifications were required. The data validation memoranda for the 2001 groundwater monitoring event are presented in Appendix C.

4.1 Main Industrial Site

The analytical results for all groundwater samples indicate that exceedances of the Illinois groundwater protection standards for the TAL metals are limited to one location at the Main Industrial Site: Monitoring Well Nest GMMW-108. The GMMW-108 well nest is located immediately downgradient from the former battery breaker. Concentrations exceeding groundwater protection standards were recorded as follows (reported as mg/L):

Groundwater Protection Standards				
	Class I	Class II	GMMW-108S	GMMW-108D
Cadmium	0.005	0.05	2	6
Zinc	5	10	14	32

All analytical results for lead collected from off-site monitoring wells at the Main Industrial Site are below the Illinois groundwater protection standards for Class I and Class II groundwaters of 0.0075 mg/L and 0.1 mg/L, respectively.

4.2 Remote Fill Areas

As required, groundwater samples were also collected from the Remote Fill Areas (Venice Township and Eagle Park Acres) during the 2001 annual monitoring event. The groundwater samples collected from the Remote Fill Areas were submitted for laboratory analysis of TAL metals for total lead. A summary of the groundwater sampling results for the Remote Fill Areas is presented in Table 2.

All analytical results for the groundwater samples collected from the Remote Fill Areas were below the Illinois groundwater protection standards for lead.

5.0 Summary of Findings

The following findings can be made based on the field observations and laboratory data obtained during the 2001 annual groundwater monitoring event at the NL Industries/Taracorp Site.

Main Industrial Site

- Historical groundwater elevation data collected during the remedial investigation indicated a south-southwesterly flow direction in the surficial aquifer. Groundwater elevation data collected during the present investigation showed a similar flow pattern.
- Exceedances of the Illinois groundwater protection standards for the TAL metals are limited to one location at the Main Industrial Site: Monitoring Well Nest GMMW-108.
- Lead was not detected in samples from off-site downgradient wells installed at the Granite City Steel facility (GMMW-115, GMMW-124, and GMMW-125) or from the well installed on Terminal Railroad of St. Louis property (GMMW-116) during this monitoring event, again confirming that lead has not migrated off the Main Industrial Site.

Remote Fill Areas

- Lead was not detected in the groundwater samples collected from wells in Venice Township (GMMW-117, GMMW-118, and GMMW-119) or from wells in Eagle Park Acres (GMMW-120, GMMW-121, and GMMW-122) during this groundwater monitoring event.

Based on these findings, it can again be concluded that the relatively low-levels of metals that have been detected in monitoring wells in the former source area at the Main Industrial Site are not mobile in groundwater and have not migrated offsite. This conclusion is based on reproducible analytical results obtained during this recent December 2001 monitoring event and the two separate groundwater sampling events performed during the 2000 Pre-Design Investigation.

6.0 References

- ARCADIS G&M, Inc. Consultants. 2000. Pre-Design Investigation Work Plan for Groundwater, NL/Taracorp Superfund Site, Granite City, Illinois, August 25, 2000 (Draft approved October 25, 1999).
- ARCADIS G&M, Inc. Consultants. 2000. Pre-Design Investigation Report for Groundwater, NL/Taracorp Superfund Site, Granite City, Illinois, September 2000.
- ARCADIS G&M, Inc. Consultants. 2000. Groundwater Monitoring Plan, NL/Taracorp Superfund Site, Granite City, Illinois, December 2000.
- Bergstrom, Robert E., and Theodore R. Walker. 1956. Groundwater Geology of the East St. Louis Area, Illinois. Illinois State Geological Survey Report of Investigations 191, 40 pp.
- Collins, M.A. and Richards, S.S. 1986. Ground-Water Levels and Pumpage in the East St. Louis Area, Illinois 1978-1980, Illinois State Water Survey, 1986.
- Illinois Environmental Protection Agency (IEPA). 1983. A Land Pollution Assessment of Granite City/Taracorp Industries, September 1983.
- O'Brien & Gere Engineers, Inc. 1986. Remedial Investigation Feasibility Study Work Plan, Taracorp, Granite City, Illinois, May 1986.
- O'Brien & Gere Engineers, Inc. 1987. Addendum to Work Plan, Remedial Investigation, Taracorp, Granite City, Illinois, June 1987.
- Woodward-Clyde Consultants. 1993. Supplemental Groundwater Investigation: Fourth Groundwater Sampling Event, NL/Taracorp Superfund Site, Granite City, Illinois, November 1993.
- Woodward-Clyde Consultants. 1995. Second Addendum to the Feasibility Study, NL/Taracorp Superfund Site, Granite City, Illinois, February 1995.

TABLES



Table 1. Groundwater Elevation Data,
NL Industries/Taracorp Site, Granite City, Illinois.

Well Identification	Riser Elevation* (mst)	Well Diameter (inches)	Screen Material/Construction	Screen Length (ft)	Screen Interval (ft bsl)	Well Depth (ft bsl)	March/April 2000 Depth to Groundwater	Total Depth	December 2000 Depth to Groundwater	Mar-00 Groundwater Elevation	Dec-01 Groundwater Elevation
MW-101	421.45	2.0	Type A	10.0	15.0-25.0	25.0	20.26	26.51	19.76	26.11	401.19
MW-102	416.58	2.0	Type A	10.0	15.0-25.0	25.0	18.18	24.37	16.94	24.15	398.40
GMMW-103R	NA	2.0	Type B	10.0	13.0-23.0	23.0	18.92	25.76	17.85	25.57	NA
MW-104	422.25	2.0	Type A	10.0	17.0-27.0	27.0	22.95	29.23	21.95	28.77	399.30
MW-105S	428.66	2.0	Type A	5.0	21.0-26.0	26.0	DRY	28.85	DRY	28.63	NA
MW-105D	428.74	2.0	Type A	5.0	30.3-35.3	35.3	29.90	37.98	28.75	37.75	398.84
MW-106S	423.71	2.0	Type A	5.0	15.79-20.79	20.79	DRY	22.55	DRY	22.33	NA
MW-106D	423.79	2.0	Type A	5.0	29.91-34.91	34.91	25.03	37.64	23.82	37.41	398.76
MW-107S	420.78	2.0	Type A	5.0	17.46-22.46	22.46	17.11	24.40	15.7	23.87	403.67
MW-107D	421.65	2.0	Type A	5.0	30.44-35.44	35.44	23.03	38.32	21.57	37.63	398.62
GMMW-108S	NA	2.0	Type B	10.0	19.0-29.0	29.0	23.75	31.55	22.71	31.36	NA
MW-108D	422.71	2.0	Type A	5.0	27.26-32.26	32.26	23.26	33.94	22.06	33.62	399.45
GMMW-108X	NA	2.0	Type B	10.0	40.0-50.0	50.0	24.32	52.46	23.14	52.25	NA
GMMW-109S	NA	2.0	Type B	10.0	14.0-24.0	24.0	20.13	26.53	19.03	26.33	NA
GMMW-109D	NA	2.0	Type B	10.0	26.5-36.5	36.5	20.15	38.03	19.1	37.83	NA
GMMW-109X	NA	2.0	Type B	10.0	40.0-50.0	50.0	20.13	52.23	19.06	52.03	NA
GMMW-112S	NA	2.0	Type B	10.0	11.0-21.0	21.0	18.34	23.31	17.16	23.11	NA
GMMW-112D	NA	2.0	Type B	10.0	27.5-37.5	37.5	18.36	39.90	17.18	39.69	NA
GMMW-113S	NA	2.0	Type B	10.0	12.0-22.0	22.0	15.60	21.65	14.4	21.44	NA
GMMW-113D	NA	2.0	Type B	10.0	27.5-37.5	37.5	15.52	37.13	14.3	36.93	NA
GMMW-115S	NA	2.0	Type B	10.0	18.0-28.0	28.0	NM	NM	18.98	27.45	NA
GMMW-115D	NA	2.0	Type B	10.0	31.0-41.0	41.0	NM	NM	19.07	39.87	NA
GMMW-116S	NA	2.0	Type B	10.0	21.0-31.0	31.0	NM	NM	22.62	30.51	NA
GMMW-116D	NA	2.0	Type B	10.0	34.0-44.0	44.0	NM	NM	22.66	42.57	NA
GMMW-117	NA	2.0	Type B	10.0	14.0-24.0	24.0	19.14	23.70	18.32	23.5	NA
GMMW-118	NA	2.0	Type B	10.0	24.0-34.0	34.0	27.44	33.65	27.12	33.44	NA
GMMW-119	NA	2.0	Type B	10.0	12.0-22.0	22.0	15.55	21.59	14.66	21.41	NA
GMMW-120	NA	2.0	Type B	10.0	11.0-21.0	21.0	12.68	20.54	12.1	20.5	NA
GMMW-121	NA	2.0	Type B	10.0	10.0-20.0	20.0	15.60	19.78	14.99	19.58	NA
GMMW-122	NA	2.0	Type B	10.0	11.0-21.0	21.0	12.57	20.56	11.91	20.35	NA
GMMW-123	NA	2.0	Type B	10.0	12.0-22.0	22.0	12.61	21.78	11.87	21.6	NA
GMMW-124S	NA	2.0	Type B	10.0	17.0-27.0	27.0	NM	NM	18.38	26.5	NA
GMMW-124D	NA	2.0	Type B	10.0	30.0-40.0	40.0	NM	NM	18.45	39.43	NA
GMMW-125	NA	2.0	Type B	10.0	19.0-29.0	29.0	NM	NM	21.1	28.77	NA
GMMW-126	NA	2.0	Type B	10.0	16.0-26.0	26.0	NM	NM	16.52	25.53	NA

Notes:

*Source: "Supplemental Groundwater Investigation" Woodward-Clyde Consultants, November 1993.
Groundwater measurements presented as feet below north side, top of casing.

All screen material is Polyvinyl chloride (PVC).

Type A screen material is Schedule 40 PVC with 0.010 inch slot size.

Type B screen material is Vee-Pak (pre-sand packed) Schedule 40 PVC with 0.008 inch slot size.

bsl below land surface
msl mean sea level

NA Not Available

NM Not Measured

Table 2. Groundwater Analytical Results,
NL Industries/Taracorp Superfund Site, Granite City, Illinois.

Well Designation	Sample Date	Analytical Parameters			Well Designation	Sample Date	Analytical Parameters		
		Cadmium	Lead	Zinc			Cadmium	Lead	Zinc
<i>Groundwater Class I</i>	0.005	0.0075	5		<i>Groundwater Class I</i>	0.005	0.0075	5	
<i>Groundwater Class II</i>	0.05	0.1	10		<i>Groundwater Class II</i>	0.05	0.1	10	
MW-101	03/22/00	<0.005	0.0056	<0.02	MW-113S	03/22/00	<0.005	<0.005	<0.02
	04/11/00	<0.005	<0.005	<0.02		04/11/00	<0.005	<0.005	<0.02
	04/11/00	<0.005	<0.005	<0.02		12/11/01	<0.005	<0.005	<0.02
	12/11/01	<0.005	<0.005	<0.02		03/22/00	<0.005	<0.005	<0.02
MW-102	03/22/00	<0.005	[REDACTED]	<0.02		04/12/00	<0.005	<0.005	<0.02
	04/11/00	<0.005	<0.005	<0.02		12/11/01	<0.005	<0.005	<0.02
	12/11/01	<0.005	<0.005	<0.02		05/22/00	<0.0050	<0.0050	NA
	03/20/00	<0.005	<0.005	<0.02	MW-115S	07/26/00	<0.0050	<0.0050	<0.020
MW-103R	04/10/00	<0.005	<0.005	<0.02		12/11/01	<0.005	<0.005	<0.02
	12/11/01	<0.005	<0.005	<0.02		07/26/00	<0.0050	<0.0050	<0.020
MW-104	03/22/00	<0.005	[REDACTED]	0.028		12/11/01	<0.005	<0.005	<0.02
	04/12/00	<0.005	<0.005	<0.02		05/22/00	<0.0050	<0.0050	NA
	12/13/01	<0.005	<0.005	<0.02		07/26/00	<0.0050	<0.0050	<0.020
	03/21/00	<0.005	[REDACTED]	0.024	MW-115D	12/13/01	<0.005	<0.005	<0.02
MW-105D	04/11/00	<0.005	0.0051	<0.02		05/22/00	<0.0050	<0.0050	NA
	12/13/01	<0.005	<0.005	<0.02		07/26/00	<0.0050	<0.0050	<0.020
MW-106D	03/21/00	<0.005	<0.005	<0.02		12/13/01	<0.005	<0.005	<0.02
	04/11/00	<0.005	<0.005	<0.02		03/23/00	NA	<0.005	<0.02
	12/13/01	<0.005	<0.005	<0.02		04/12/00	NA	<0.005	NA
	03/22/00	<0.005	[REDACTED]	0.03	MW-116S	12/12/01	NA	<0.005	NA
MW-107S	04/11/00	<0.005	<0.005	<0.02		03/23/00	NA	<0.005	<0.02
	12/13/01	<0.005	<0.005	<0.02		04/12/00	NA	<0.005	NA
MW-107D	03/22/00	<0.005	[REDACTED]	0.056		12/12/01	NA	<0.005	NA
	04/11/00	<0.005	[REDACTED]	0.17		03/23/00	NA	<0.005	<0.02
	12/13/01	<0.005	<0.005	<0.02		04/12/00	NA	<0.005	NA
	03/21/00	[REDACTED]	<0.005	[REDACTED]	MW-117	12/12/01	NA	<0.005	NA
MW-108S	04/11/00	[REDACTED]	<0.005	[REDACTED]		03/23/00	NA	<0.005	<0.02
	12/12/01	[REDACTED]	<0.005	[REDACTED]		04/12/00	NA	<0.005	NA
MW-108D	03/21/00	[REDACTED]	<0.005	[REDACTED]		12/12/01	NA	<0.005	NA
	04/11/00	[REDACTED]	<0.005	[REDACTED]		03/23/00	NA	<0.005	<0.02
	12/12/01	[REDACTED]	<0.01 U*F6	[REDACTED]		04/12/00	NA	<0.005	NA
	03/21/00	<0.005	<0.005	J	MW-118	12/12/01	NA	<0.005	NA
MW-108X	03/21/00	[REDACTED]	<0.005	[REDACTED]		03/23/00	NA	<0.005	<0.02
	04/11/00	[REDACTED]	<0.005	[REDACTED]		04/12/00	NA	<0.005	NA
	12/12/01	<0.005	<0.005	0.047		12/12/01	NA	<0.005	NA
	03/21/00	[REDACTED]	<0.005	[REDACTED]	MW-119	03/23/00	NA	<0.005	<0.02
MW-109S	04/11/00	[REDACTED]	<0.005	[REDACTED]		04/12/00	NA	<0.005	NA
	12/12/01	<0.005	<0.005	0.047		12/12/01	NA	<0.005	NA
	03/21/00	<0.005	<0.005	<0.02		03/23/00	NA	<0.005	<0.02
	04/10/00	<0.005	<0.005	<0.02	MW-120	04/12/00	NA	<0.005	<0.02
MW-109D	12/10/01	<0.005	<0.005	<0.02		12/12/01	NA	<0.005	NA
	03/21/00	<0.005	<0.005	<0.02		03/23/00	NA	<0.005	<0.02
	04/10/00	<0.005	<0.005	<0.02		04/12/00	NA	<0.005	NA
	12/10/01	<0.005	<0.005	<0.02	MW-121	12/12/01	NA	<0.005	NA
MW-109X	03/21/00	<0.005	[REDACTED]	0.042		03/23/00	NA	<0.005	<0.02
	04/10/00	<0.005	<0.005	<0.02		04/12/00	NA	<0.005	NA
	12/10/01	<0.005	<0.005	<0.02		12/12/01	NA	<0.005	NA
	03/21/00	<0.005	[REDACTED]	0.042	MW-122	03/23/00	NA	<0.005	<0.02
MW-112S	04/10/00	<0.005	<0.005	<0.02		04/12/00	NA	<0.005	NA
	12/10/01	<0.005	<0.005	<0.02		12/12/01	NA	<0.005	NA
	03/20/00	<0.005	<0.005	<0.02		03/23/00	NA	<0.005	<0.02
	04/10/00	<0.005	<0.005	<0.02	MW-123	04/12/00	<0.005	<0.005	<0.02
MW-112D	12/10/01	<0.005	<0.005	<0.02		12/11/01	<0.005	<0.005	<0.02
	03/20/00	<0.005	<0.005	<0.02		05/22/00	<0.0050	<0.0050	NA
	04/10/00	<0.005	<0.005	<0.02		07/26/00	<0.0050	<0.0050	<0.020
	12/10/01	<0.005	<0.005	<0.02	MW-124S	12/11/01	<0.005	<0.005	<0.02
MW-124D	03/21/00	[REDACTED]	[REDACTED]	[REDACTED]		05/22/00	<0.0050	<0.0050	NA
	04/10/00	[REDACTED]	[REDACTED]	[REDACTED]		07/26/00	<0.0050	<0.0050	<0.020
	12/10/01	[REDACTED]	[REDACTED]	[REDACTED]		12/11/01	<0.005	<0.005	<0.02
	03/21/00	<0.005	[REDACTED]	0.042	MW-124D	05/22/00	<0.0050	<0.0050	NA
MW-125	04/10/00	<0.005	<0.005	<0.02		05/22/00	<0.0050	<0.0050	NA
	12/10/01	<0.005	<0.005	<0.02		07/26/00	<0.0050	<0.0050	<0.020
	03/20/00	<0.005	<0.005	<0.02		12/11/01	<0.005	<0.005	<0.02
	04/10/00	<0.005	<0.005	<0.02	MW-125	05/22/00	<0.0050	<0.0050	NA
MW-126	12/10/01	<0.005	<0.005	<0.02		07/26/00	<0.0050	<0.0050	<0.020
	03/20/00	<0.005	<0.005	<0.02		12/13/01	<0.005	<0.005	<0.02
	04/10/00	<0.005	<0.005	<0.02		07/26/00	<0.0050	<0.0050	<0.020
	12/10/01	<0.005	<0.005	<0.02	MW-126	12/11/01	<0.005	<0.005	<0.02
MW-126	03/21/00	[REDACTED]	[REDACTED]	[REDACTED]		07/26/00	<0.0050	<0.0050	<0.020
	04/10/00	[REDACTED]	[REDACTED]	[REDACTED]		12/11/01	<0.005	<0.005	<0.02

Table 2. Groundwater Analytical Results,
NL Industries/Taracorp Superfund Site, Granite City, Illinois.

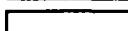
Well Designation	Sample Date	Analytical Parameters			Well Designation	Sample Date	Analytical Parameters		
		Cadmium	Lead	Zinc			Cadmium	Lead	Zinc

Results are reported in milligrams per liter (mg/L).

Sample collected using low-flow unfiltered methodology.

NA Not analyzed.

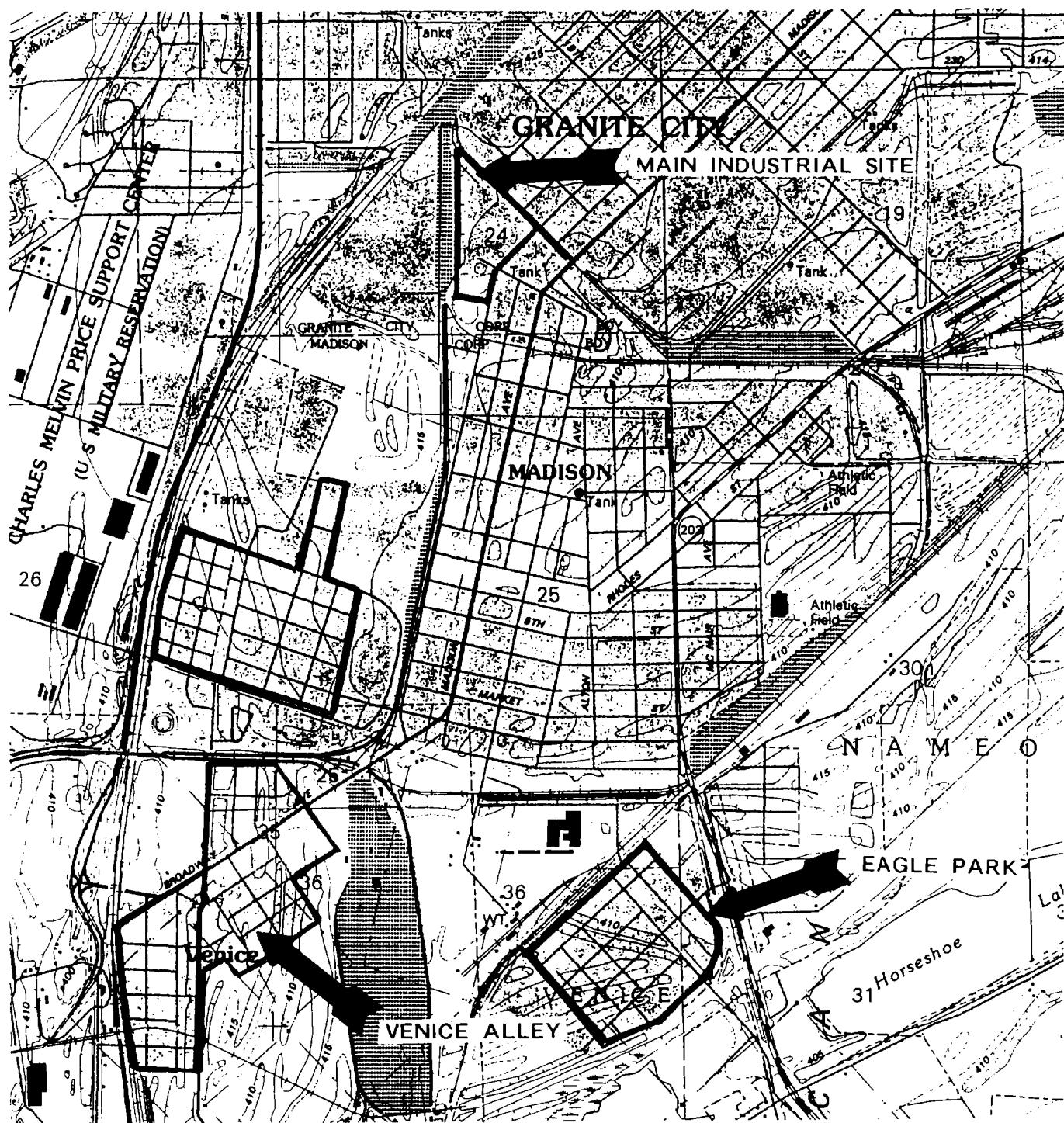
 Exceeds Class I

 Exceeds Class II

G:\A\project\NL\Industries\CI001003.000-1\CI001003.0006 2001 GW Monitoring\Table2_AnalyticalResults.xls\Final

FIGURES

1



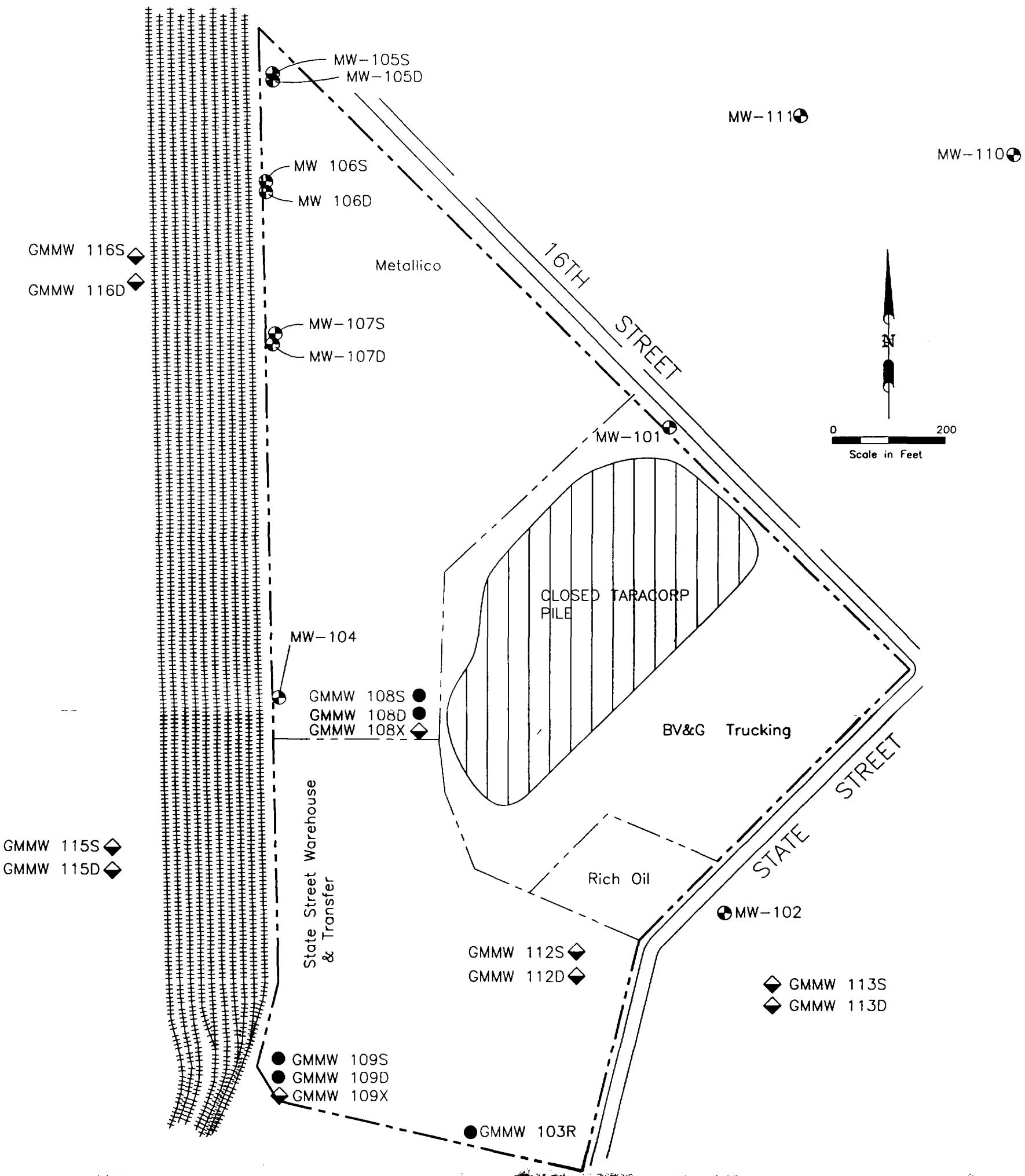
SOURCE: USGS 7.5 MIN. TOPOGRAPHIC MAP, GRANITE CITY, ILLINOIS/MISSOURI QUADRANGLE, 1954, REVISED IN 1993.

A scale bar with markings at 0', 1000', 2000', and 4000'. A horizontal line with tick marks extends from the 0' mark to the 4000' mark. A vertical line extends upwards from the 2000' mark. Below the scale bar, the text "SCALE IN FEET" is centered.



 ARCADIS 35 East Wacker Drive, Suite 1000 Chicago, IL 60601 Tel (312)263-6703 Fax (312)263-7897	Drawing Date 03/29/02	File Name AGMSITE.DWG	File Location C:\drafting\clients\NLIndustries	Drawn By FS	Checked By K. LALA	Project Manager J. KRATZMEYER
	NL INDUSTRIES TARACROP SUPERFUND SITE SITE LOCATION MAP 2001 ANNUAL GROUNDWATER MONITORING REPORT GRANITE CITY, ILLINOIS			Department Manager S. GLENN	Unique Number	

SEE FIGURE 4 FOR LOCATION
OF MONITORING WELL GMMW 126



◆ GMMW 124S
◆ GMMW 124D

LEGEND

MW-101 ●	EXISTING MONITORING WELL/IDENTIFICATION
	RAILROAD TRACKS
—	PROPERTY LINE
GMMW 112S,D ◆	MONITORING WELL CLUSTER/IDENTIFICATION (Shallow and Deep depths)
GMMW 109X ◆	DEEPER MONITORING WELL/IDENTIFICATION
GMMW 103R ●	REPLACEMENT MONITORING WELL/IDENTIFICATION
S	SHALLOW (12-34 FEET BELOW LAND SURFACE)
D	DEEP (27-44 FEET BELOW LAND SURFACE)
X	DEEPEST (40-50 FEET BELOW LAND SURFACE)

Source: Woodward-Clyde Consultants, Figure No.1,
November 11, 1993, Proj. no. C3M11Q.

LEGEND

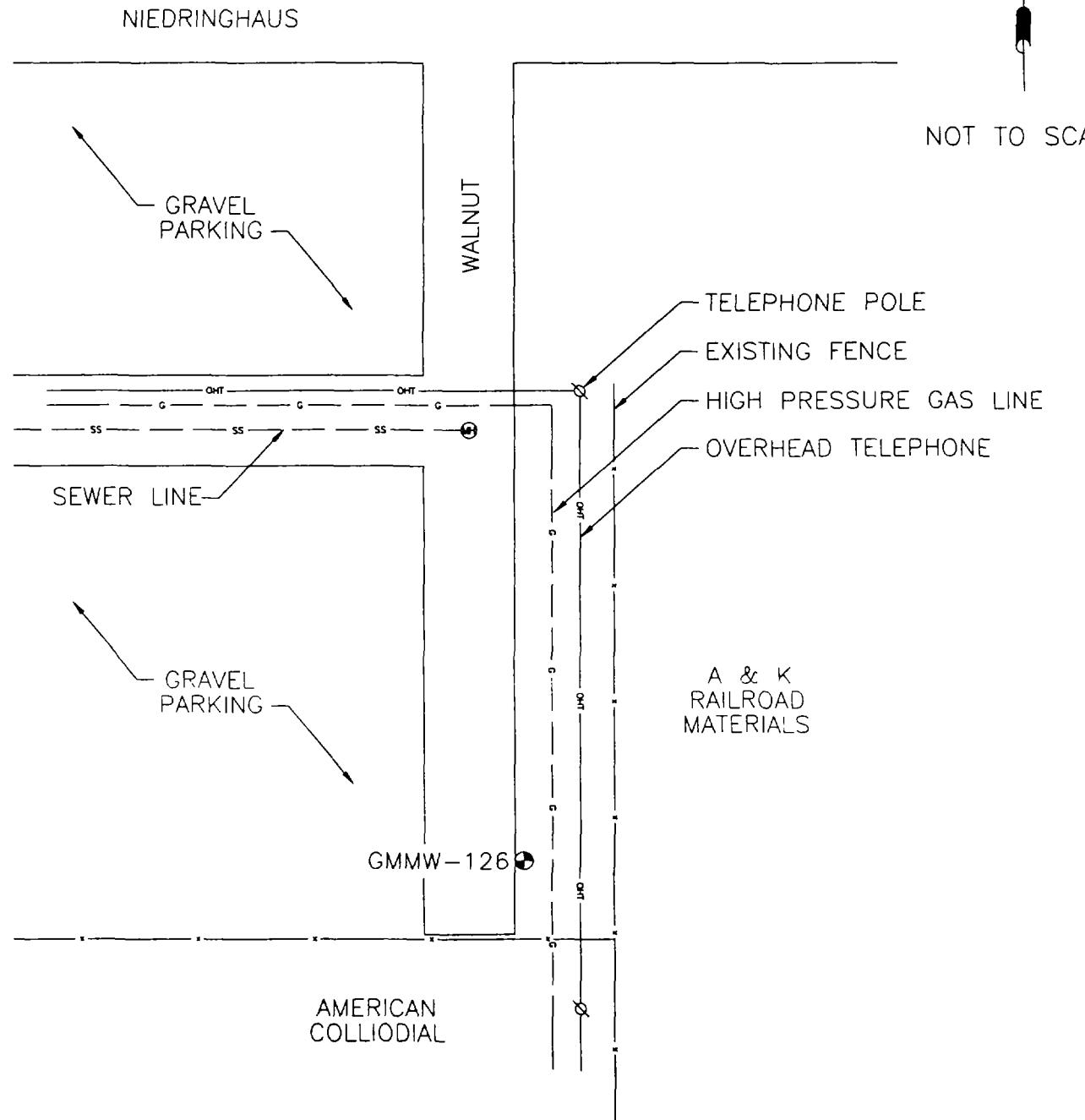
0 100

GMMW-125 MONITORING WELL LOCATION/IDENTIFICATION

User Name / Fname	Drawing Date 03/29/02	File Name AGMSITE.DWG	File Location C:\drafting\clients\NLIndustries	Drawn By FS	Checked By K. LALA	Project Manager J. KRATZMEYER
copyright © 2002			NL INDUSTRIES/TARACROP MAIN INDUSTRIAL SITE MONITORING WELL LOCATION GMMW-125 2001 ANNUAL GROUNDWATER MONITORING REPORT GRANITE CITY, ILLINOIS		Department Manager S. CLENN	Unique Number
					Project Number CI001003.0006	Figure 3

 **ARCADIS**

35 East Wacker Drive, Suite 1000
Chicago, IL 60601
Tel (312)263-6703 Fax (312)263-7897

LEGEND

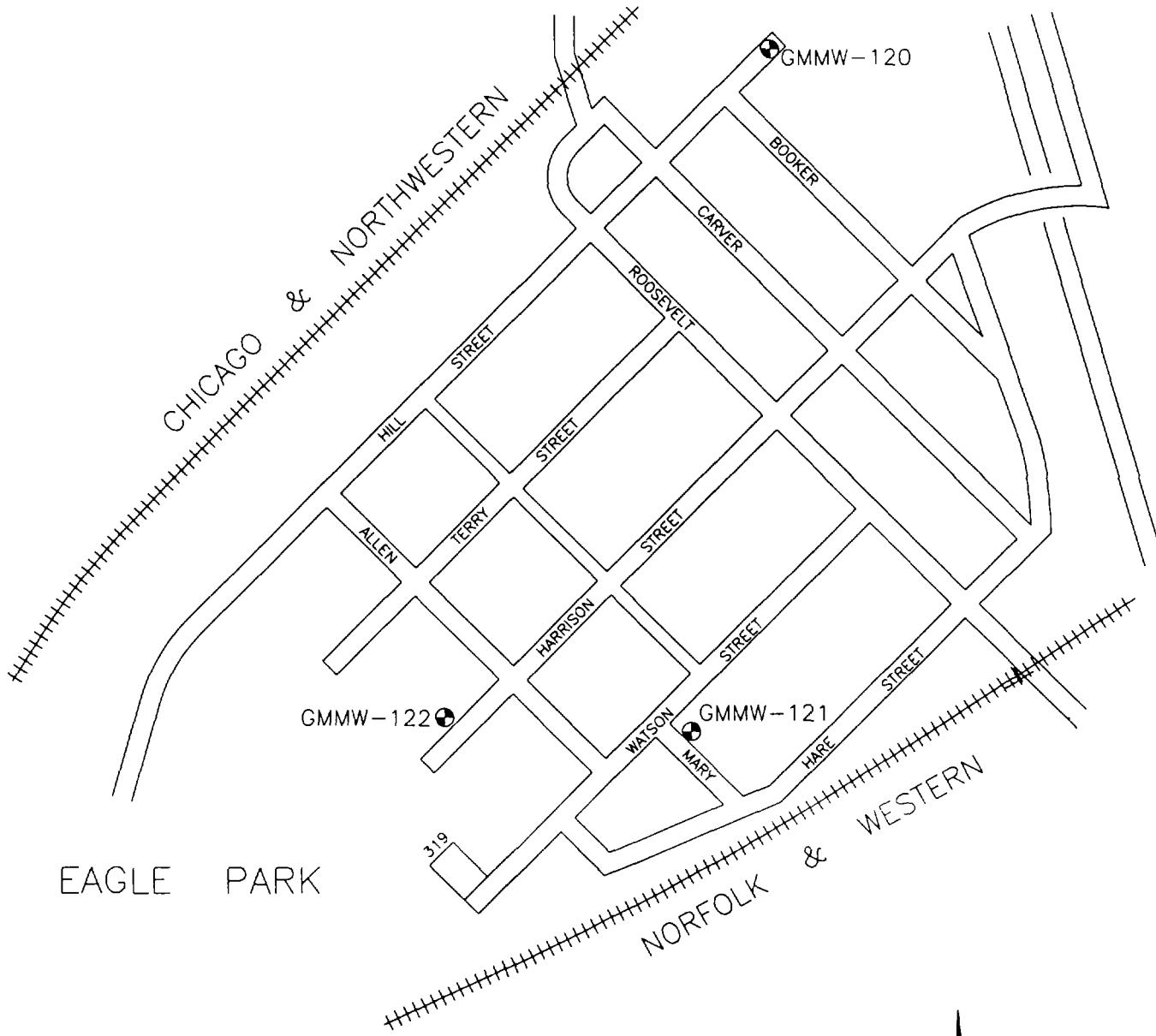
GMMW-126 • MONITORING WELL LOCATION/IDENTIFICATION

User Name : fsofo	ARCADIS	Drawing Date 03/29/02	File Name 00C0327.DWG	File Location C:\drafting\clients\NLIndustries	Drawn BY FS	Checked BY K. LALA	Project Manager J. KRATZMEYER
copyright © 2002	35 East Wacker Drive, Suite 1000 Chicago, IL 60601 Tel (312)263-6703 Fax (312)263-7897			NL INDUSTRIES/TARACORP SUPERFUND SITE MONITORING WELL LOCATION GRANITE CITY RIGHT-OF-WAY 2001 ANNUAL GROUNDWATER MONITORING REPORT GRANITE CITY, ILLINOIS		Department Manager S. GLENN	Unique Number

Date/Time : Mon, 01 Apr 2002 - 10:09am

Auto Version : R15.06

Path Name : C:\LUKAT\INC\CLIENTS\NLIndustries\00C10325.dwg



LEGEND

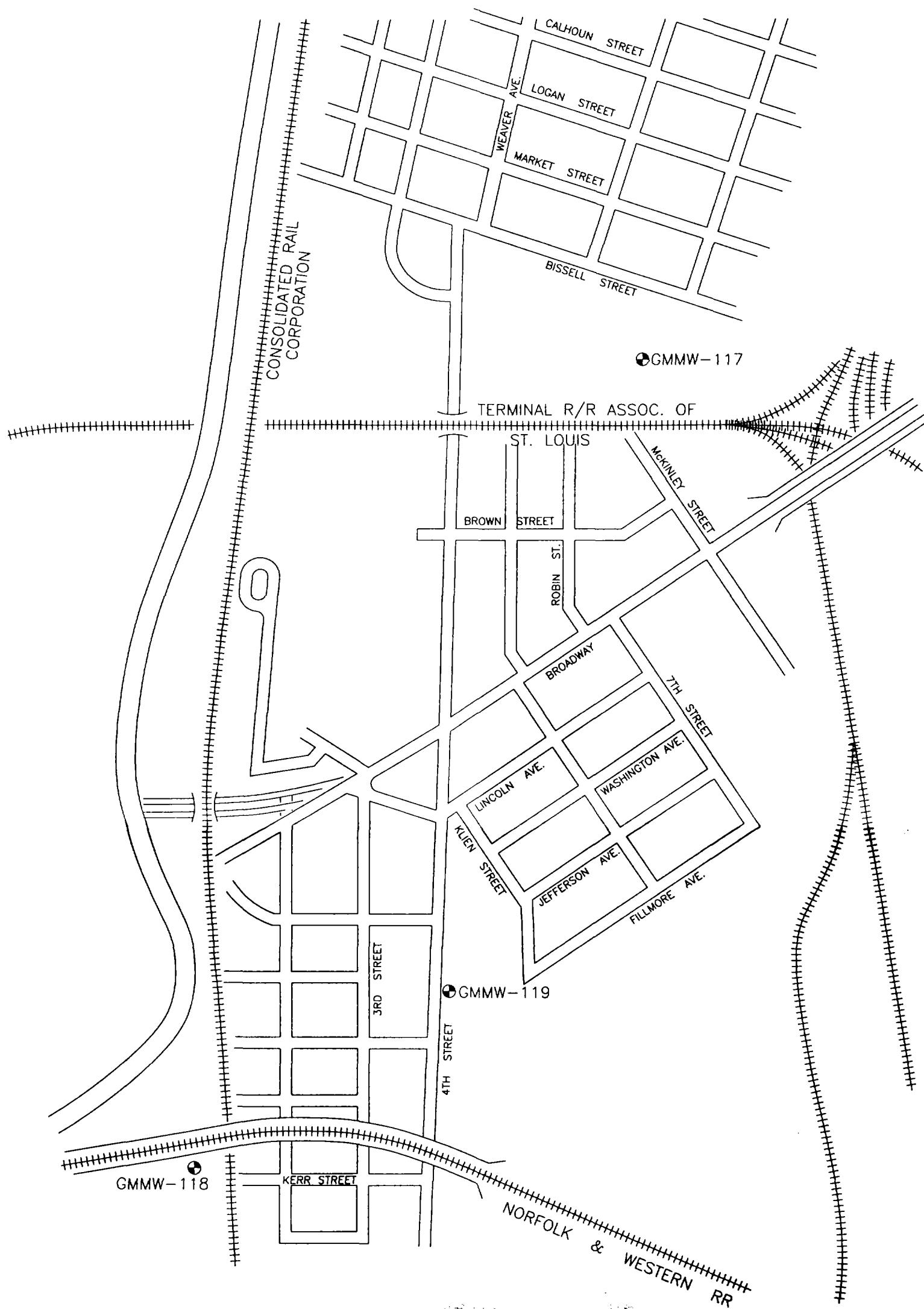
||||| RAILROAD TRACKS

GMMW-120 ● SHALLOW MONITORING WELL/IDENTIFICATION

0 500

Scale in Feet

Basemap Source: Woodward-Clyde Consultants,
Figure 1-6, June 1, 1994, Proj. No. C3M11Q.

LEGEND

- GMMW-117 ● SHALLOW MONITORING WELL/IDENTIFICATION
 ++++++ RAILROAD TRACKS

0 600

Scale in Feet
 Basemap Source: Woodward-Clyde Consultants, Figure No. 1-7,
 February 14, 1994, Proj. No. C3M11Q.



0 100

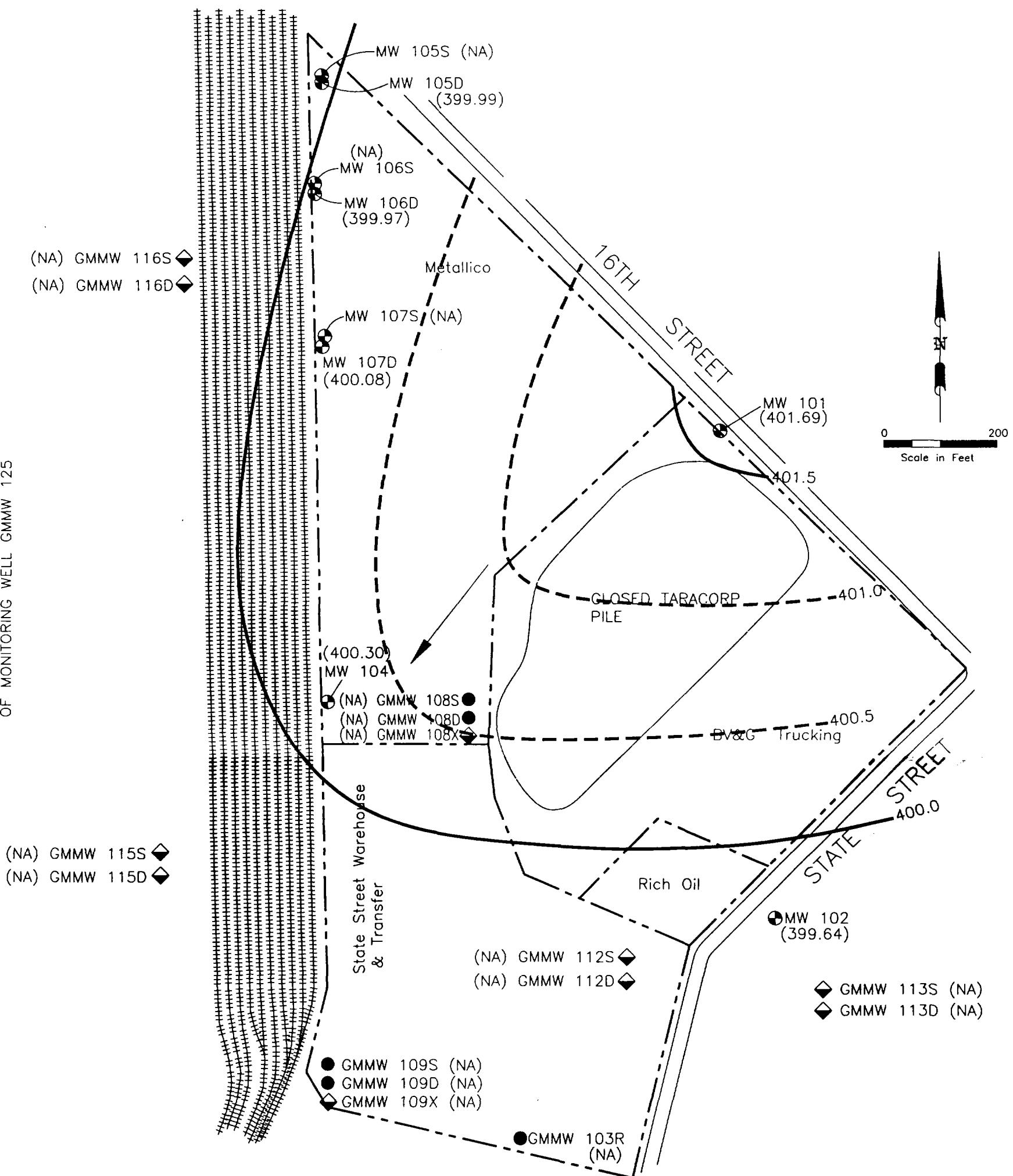
LEGEND

GMMW-123 MONITORING WELL LOCATION/IDENTIFICATION

Drawing Date	File Name	File Location	Drawn By	Checked By	Project Manager
03/29/02	ACMSITE.DWG	C:\drafting\clients\NLIndustries	FS	K. LALA	J. KRATZMEYER
NL INDUSTRIES/TARACROP NATIONAL STEEL CORP. MONITORING WELL LOCATION 2001 ANNUAL GROUNDWATER MONITORING REPORT GRANITE CITY, ILLINOIS					
Department Manager S. GLENN					
Unique Number Figure					
Project Number C1001003.0006					
7					

SEE FIGURE 4 FOR LOCATION
OF MONITORING WELL GMMW 126

SEE FIGURE 3 FOR LOCATION
OF MONITORING WELL GMMW 125



LEGEND

- | | |
|------------------|--|
| ◆ GMMW 124S (NA) | MW101 ◆ EXISTING MONITORING WELL/IDENTIFICATION |
| ◆ GMMW 124D (NA) | — PROPERTY LINE |
| RAILROAD TRACKS | |
| GMMW 112S,D ◆ | MONITORING WELL CLUSTER/IDENTIFICATION (Shallow and Deep depths) |
| GMMW 109X ◆ | DEEPER MONITORING WELL/IDENTIFICATION |
| GMMW 103R ● | REPLACEMENT MONITORING WELL/IDENTIFICATION |
| S | SHALLOW (12-34 FEET BELOW LAND SURFACE) |
| D | DEEP (27-44 FEET BELOW LAND SURFACE) |
| X | DEEPE (40-50 FEET BELOW LAND SURFACE) |
| NA | NOT AVAILBLE |
| (399.64) | GROUNDWATER ELEVATION (IN FEET) |
| 400.0 — | GROUNDWATER CONTOUR (DASHED WHERE INFERRED) |
| ← | GROUNDWATER FLOW DIRECTION |

Source: Woodward-Clyde Consultants, Figure No.1,
November 11, 1993, Proj. no. C3M11Q.

Appendix A

Groundwater Sampling Logs

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No.	CI001003.0006	Well	MW-101	Date	12/11/2001
Screen Setting	Measuring Point Description			Casing Diameter (inches)	2
Static Water Level	Measured Width			Well Materials	X PVC ST. Steel
Total depth	26.11	Pump On:	14:21	Pump Intake:	
Purge Method	Pump Off: 14:50			Volumes Purged	
Centrifugal Submersible	Sample Time: 14:48				
Other	Peristaltic	Bailer Type:	Sampled By: Vasas		

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well MW-102 Date 12/11/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
-------------------	--------------------------------	-----------------------------	---

Static Measured Width _____ Well Materials X PVC
Water Level 16:94 _____ ST. Steel

Total depth 24:15 Pump On: 10:49 Pump Intake: _____

Purge Method Pump Off: 11:12 Volumes Purged _____

Centrifugal Sample Time: 11:12

Submersible _____ Sampled _____
Other Peristaltic Bailer Type: _____ By: Vosas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-103R Date 12/11/2001

Screen Setting _____ Measuring Point Description _____ Casing Diameter (inches) _____ 2 _____

Static Measured Width _____ Well Materials X PVC
Water Level 17:85 _____ ST. Steel

Total depth 25:57 Pump On: 8:18 Pump

Purge Method Pump Off: 8:37 Volumes Purged _____

Centrifugal _____ Sample Time: 8:36

Submersible _____ Sampled _____
Other Peristaltic Bailer Type: _____ By: Vasas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well MW-104 Date 12/13/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
Static Water Level	Measured Width	Well Materials	<input checked="" type="checkbox"/> PVC <input type="checkbox"/> ST. Steel
Total depth	28.77	Pump On:	10:08
Purge Method	Pump Off:	10:31	Pump Intake:
Centrifugal Submersible Other	Sample Time:	10:29	Volumes Purged
	Bailer Type:		Sampled By: Vasas

ARCADIS G&M

Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well MW-105D Date 12/13/2001

Screen Setting _____ Measuring Point Description _____ Casing Diameter (inches) _____ 2 _____

Static Water Level 28.75 Measured Width _____ Well Materials X PVC
____ ST. Steel

Total depth 37.75 Pump On: 12:50 Pump Intake:

Purge Method Pump Off: 13:25 Volumes Purged _____

Centrifugal Sample Time: 13:24

Submersible _____ Sampled _____
Other Peristaltic Bailer Type: _____ By: Vassas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well MW-106D Date 12/13/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
Static Water Level	Measured Width	Well Materials	<input checked="" type="checkbox"/> PVC <input type="checkbox"/> ST. Steel
Total depth	37.41	Pump On:	12:11
Purge Method	Pump Off:	12:32	Pump Intake:
Centrifugal Submersible Other	Sample Time: Peristaltic	12:30	Volumes Purged
	Bailer Type:		Sampled By: Vasas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well MW-1075 Date 12/13/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
Static Water Level	Measured Width	Well Materials	X PVC ST. Steel
Total depth	23.87	Pump On:	10:44
Purge Method	Pump Off:	Pump Intake:	11:18
Centrifugal Submersible	Sample Time:	Volumes Purged	11:15
Other	Peristaltic	Bailer Type:	Vasas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well MW-107D Date 12/13/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
Static Water Level	Measured Width	Well Materials	<input checked="" type="checkbox"/> PVC <input type="checkbox"/> ST. Steel
Total depth	37.63	Pump On:	11:25
Purge Method	Pump Off:	11:49	Pump Intake:
Centrifugal Submersible Other	Sample Time:	11:48	Volumes Purged
	Bailer Type:		Sampled By: Vatas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-108S Date 12/12/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
Static Water Level	Measured Width	Well Materials	X PVC ST. Steel
22.71			

Total depth 31.36 Pump On: 11:02 Pump Intake:

Purge Method Pump Off: 11:46 Volumes Purged _____

Centrifugal _____ Sample Time: 11:45 Submersible _____ Sampled
Submersible _____ By: Vargas
Other Peristaltic Bailer Type:

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-108D Date 12/12/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
-------------------	--------------------------------	-----------------------------	---

Static Water Level 22.06 Measured Width _____ Well Materials X PVC
_____ ST. Steel

Total depth 33.62 Pump On: 12:00 Pump Intake:

Purge Method _____ Pump Off: 12:18 Volumes Purged _____

Centrifugal _____ Sample Time: 12:16

Submersible _____ Sampled _____
Other Peristaltic Bailer Type: By: Vasas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-108X Date 12/12/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	
			2

Static Water Level 23:14 Measured Width _____ Well Materials X PVC ST. Steel

Total depth 52:25 Pump On: 12:25 Pump Intake:

Purge Method _____ Pump Off: 12:55 Volumes Purged _____

Centrifugal _____ Sample Time: 12:53

Submersible _____ Sampled _____
Other Peristaltic Baler Type: Vasas
By: _____

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-109S Date 12/10/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	
----------------	-----------------------------	--------------------------	--

Static Water Level 19.03 Measured Width _____ Well Materials X PVC
____ ST. Steel

Total depth 26.33 Pump On: 13.42 Pump

Purge Method _____ Pump Off: _____ Volumes Purged _____

Centrifugal _____ Sample Time: 14.10 _____

Submersible _____ Sampled _____
Other Peristaltic Bailer Type: _____ By: Moosbrugger

ARCADIS G&M

Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-109D Date 12/10/2001

Screen Measuring Point Casing
Setting Description Diameter (inches) 2

Static Water Level 19.10 Measured Width _____ Well Materials X PVC
____ ST. Steel

Total depth 37.83 Pump On: 14:25 Pump Intake:

Purge Method Pump Off: _____ Volumes Purged _____

Centrifugal _____ Sample Time: 14:42

Submersible _____ Sampled _____
Other Peristaltic Bailer Type: _____ By: Moosbrugger

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No.	CI001003.0006	Well	GMMW-109X	Date	12/10/2001
Screen Setting	Measuring Point Description		Casing Diameter (inches)	2	
Static Water Level	19.06	Measured Width		Well Materials	X PVC ST. Steel
Total depth	52.03	Pump On:	14:49	Pump Intake:	
Purge Method	Pump Off:			Volumes Purged	
Centrifugal Submersible	Sample Time: 15:15			Sampled	
Other	Peristaltic	Bailer Type:		By:	Moosbrugger

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-112S Date 12/10/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
-------------------	--------------------------------	-----------------------------	---

Static Measured Width _____ Well Materials X PVC
Water Level 17.16 _____ ST. Steel

Total depth 23.11 Pump On: 16:38 Pump

Purge Method Pump Off: 16:59 Volumes Purged _____

Centrifugal _____ Sample Time: 16:58

Submersible _____ Sampled _____
Other _____ Particulate _____ Bottom _____ Bottom _____

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-112D Date 12/10/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
-------------------	--------------------------------	-----------------------------	---

Static Water Level 17.18 Measured Width _____ Well Materials X PVC
____ ST. Steel

Total depth 39.69 Pump On: 16:07 Pump Intake:

Purge Method Pump Off: _____ Volumes Purged _____

Centrifugal _____ Sample Time: 16:26

Submersible _____ Sampled _____
Other _____ Resistant _____ Soil _____ Tissue _____ Plants _____ Leaves _____

ARCADIS G&M

Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-113S Date 12/11/2001

Screen Setting _____ Measuring Point Description _____ Casing Diameter (inches) _____ 2 _____

Static Measured Width _____ Well Materials X PVC
Water Level 14:40 _____ ST. Steel

Total depth 21:44 Pump On: 9:09 Pump Intake:

Purge Method Pump Off: 9:36 Volumes Purged _____

Centrifugal _____ Sample Time: 9:35

Submersible _____ Sampled
Other Peristaltic Bailer Type: By: Vasas

Time Minutes Rate DTW Gallons pH Good TURP Beday Disc TCMAP REMARKS

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-113D Date 12/11/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
-------------------	--------------------------------	-----------------------------	---

Static Water Level 14:30 Measured Width _____ Well Materials X PVC
____ ST. Steel

Total depth 36.93 Pump On: 10:06 Pump

Purge Method _____ Pump Off: 10:31 Volumes Purged _____

Centrifugal _____ Sample Time: 10:30

Submersible _____ Sampled _____
Other Peristaltic Bailer Type: _____ By: Vosas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-115S Date 12/11/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
Static Water Level	Measured Width	Well Materials	X PVC ST. Steel
Total depth	27:45	Pump On:	16:20
Purge Method	Pump Off:	Pump Intake:	_____
Centrifugal Submersible Other	Sample Time: 16:46	Volumes Purged	_____
Peristaltic	Bailer Type:	Sampled By:	Vasas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-115D Date 12/11/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
-------------------	--------------------------------	-----------------------------	---

Static Water Level 19.07 Measured Width _____ Well Materials X PVC
____ ST. Steel

Total depth 39.87 Pump On: 16:58 Pump
Inch

Purge Method _____ Pump Off: 17:16 Volumes Purged _____

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-116S Date 12/13/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
-------------------	--------------------------------	-----------------------------	---

Static Water Level 22.62 Measured Width _____ Well Materials X PVC
____ ST. Steel

Total depth 30.51 Pump On: 8:42 Pump Intake:

Purge Method Pump Off: 9:01 Volumes Purged _____

Centrifugal _____ Sample Time: 9:00
Submersible _____ Sampled

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-116D Date 12/13/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	
			2

Static Measured Width _____ Well Materials X PVC
Water Level 22.66 _____ ST. Steel

Total depth 42.57 Pump On: 8:19 Pump Intake:

Purge Method _____ Pump Off: 8:37 Volumes Purged _____

Centrifugal _____ Sample Time: 8:36

Submersible _____ Sampled _____
Other Peristaltic Bailer Type: _____ By: Vasas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. C1001003.0006 Well GMMW-117 Date 12/12/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	
_____	_____	_____	2

Static Water Level 18.32 Measured Width _____ Well Materials X PVC
____ ST. Steel

Total depth 23.50 Pump On: 4:10 (16:10) Pump On

Purge Method Pump Off: 16:35 Volumes Purged _____

Centrifugal _____ Sample Time: 16:34
Submersible _____
Other Peristaltic _____ Bailer Type: _____
Sampled
By: Vassas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-118 Date 12/12/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	
			2

Static Measured Width _____ Well Materials X PVC
Water Level 27.12 _____ ST. Steel

Total depth 33.44 Pump On: 3:19 Pump
Intake:

Purge Method _____ Pump Off: 3:44 Volumes Purged _____

Centrifugal _____ Sample Time: 3:41

Submersible _____ Sampled _____
Other Peristaltic Bailer Type: _____ By: Vasas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-119 Date 12/12/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
Static Water Level	Measured Width	Well Materials	<input checked="" type="checkbox"/> PVC <input type="checkbox"/> ST. Steel
Total depth	21.41	Pump On:	14:37
Purge Method	Pump Off:	14:56	Pump Intake:
Centrifugal Submersible Other	Sample Time: 14:55	Volumes Purged	
Peristaltic	Bailer Type:	Sampled By:	Vasas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-120 Date 12/12/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
Static	Measured Width	Well Materials	X PVC
Water Level	12.10		ST. Steel

Total depth 20.50 Pump On: 8:23 Pump

Purge Method _____ Pump Off: 8:41 Volumes Purged _____

Centrifugal _____ Sample Time: 8:40 _____ Submersible _____ Other Peristaltic _____ Bailer Type: _____ Sampled _____ By: Vassas _____

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-121 Date 12/12/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	
			2

Static Water Level 14.99 Measured Width _____ Well Materials X PVC
____ ST. Steel

Total depth 19.58 Pump On: 9:53 Pump
End:

Purge Method _____ Pump Off: 10:28 Volumes Purged _____

Centrifugal _____ Sample Time: 10:27 _____

Submersible _____ Sampled _____
Other Peristaltic Bailer Type: _____ By: Vasas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. C1001003.0006 Well GMMW-122 Date 12/12/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	
			2

Static Water Level 11.91 Measured Width _____ Well Materials X PVC
ST. Steel

Total depth 20.35 Pump On: 9:17 Pump Intake:

Purge Method Pump Off: 9:35 Volumes Purged _____

Centrifugal _____ Sample Time: 9:34 Submersible _____ Sampled

Other Peristaltic Baler Type: _____ By: Vasas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-123 Date 12/11/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	
_____	_____	_____	2

Static Measured Width _____ Well Materials X PVC
Water Level 11.87 _____ ST. Steel

Total depth 21.60 Pump On: 13:14 Pump Intake:

Purge Method Pump Off: 13:58 Volumes Purged _____
Centrifugal Sample Time: 13:56

Submersible _____ Peristaltic _____ Bailer Type: _____ Sampled
Other _____ By: _____ Vasas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-124S Date 12/11/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
Static Water Level	Measured Width	Well Materials	<input checked="" type="checkbox"/> PVC <input type="checkbox"/> ST. Steel
Total depth	18.38	Pump On:	15:17
Purge Method		Pump Off:	15:33
Centrifugal Submersible Other	Sample Time: 15:33	Volumes Purged	
	Bailer Type:	Sampled By:	Vasas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-124D Date 12/11/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
Static Water Level	Measured Width	Well Materials	<input checked="" type="checkbox"/> PVC <input type="checkbox"/> ST. Steel
Total depth	18:45	Pump On:	15:45
Purge Method	39:43	Pump Off:	16:02
Centrifugal Submersible Other	Sample Time:	16:02	Volumes Purged _____
	Bailer Type:		Sampled By: Vasas

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-125 Date 12/13/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	
_____	_____	_____	2

Static Water Level 21.10 Measured Width _____ Well Materials X PVC
_____ ST. Steel

Total depth 28.77 Pump On: 9:21 Pump Intake:

Purge Method Pump Off: 9:40 Volumes Purged _____

ARCADIS G&M
Groundwater Sampling Form

Page 1 of 1

Project/No. CI001003.0006 Well GMMW-126 Date 12/11/2001

Screen Setting	Measuring Point Description	Casing Diameter (inches)	2
Static Water Level	Measured Width	Well Materials	<input checked="" type="checkbox"/> PVC <input type="checkbox"/> ST. Steel
Total depth	Pump On: 11:32	Pump Intake:	
Purge Method	Pump Off: 12:03	Volumes Purged	
Centrifugal Submersible Other	Sample Time: 12:02	Sampled By:	Vasas
Peristaltic	Bailer Type:		

ARCADIS

Appendix B

Laboratory Data Reports

LOG NO: S1-18018
Received: 11 DEC 01
Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client
Code: 10032014

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/	TIME SAMPLED	SDG#
18018-1	GMMW109S (12/10/01)		12-10-01/14:10	NL012
18018-2	GMMW109D (12/10/01)		12-10-01/14:42	NL012
18018-3	GMMW109X (12/10/01)		12-10-01/15:15	NL012
18018-4	GMMW112D (12/10/01)		12-10-01/16:26	NL012
18018-5	GMMW112S (12/10/01)		12-10-01/16:58	NL012
PARAMETER	18018-1	18018-2	18018-3	18018-4
				18018-5
Lead (SW6010)				
Lead, mg/l	<0.0050	<0.0050	<0.0050	<0.0050
Dilution Factor	1	1	1	1
Prep Date	12.13.01	12.13.01	12.13.01	12.13.01
Analysis Date	12.14.01	12.15.01	12.15.01	12.15.01
Batch ID	1213G	1213G	1213G	1213G
Quantitation Factor	1	1	1	1
Cadmium (SW6010)				
Cadmium, mg/l	<0.0050	<0.0050	<0.0050	<0.0050
Dilution Factor	1	1	1	1
Prep Date	12.13.01	12.13.01	12.13.01	12.13.01
Analysis Date	12.14.01	12.15.01	12.15.01	12.15.01
Batch ID	1213G	1213G	1213G	1213G
Quantitation Factor	1	1	1	1

SEVERN
TRENT
SERVICES

5102 LaRoche Avenue • Savannah, GA 31404 • Tel: 912 354 7858 • Fax: 912 352 0165 • www.stl-inc.com

STL Savannah

LOG NO: S1-18018

Received: 11 DEC 01

Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site

Sampled By: Client

Code: 10032014

Page 2

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/	TIME SAMPLED	SDG#
18018-1	GMMW109S (12/10/01)	12-10-01/14:10	NL012	
18018-2	GMMW109D (12/10/01)	12-10-01/14:42	NL012	
18018-3	GMMW109X (12/10/01)	12-10-01/15:15	NL012	
18018-4	GMMW112D (12/10/01)	12-10-01/16:26	NL012	
18018-5	GMMW112S (12/10/01)	12-10-01/16:58	NL012	
PARAMETER	18018-1	18018-2	18018-3	18018-4
Zinc (SW6010)				18018-5
Zinc, mg/l	<0.020	<0.020	<0.020	<0.020
Dilution Factor	1	1	1	1
Prep Date	12.13.01	12.13.01	12.13.01	12.13.01
Analysis Date	12.14.01	12.15.01	12.15.01	12.15.01
Batch ID	1213G	1213G	1213G	1213G
Quantitation Factor	1	1	1	1

LOG NO: S1-18018

Received: 11 DEC 01

Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site

Sampled By: Client

Code: 10032014

Page 3

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE /	TIME SAMPLED	SDG#
18018-6	Method Blank			NL012
18018-7	Lab Control Standard & Recovery			NL012
18018-8	LCS Accuracy Control Limit (%R)			NL012
18018-14	Lab Control Standard Result			NL012
18018-15	Spike Amount Added, LCS			NL012
PARAMETER	18018-6 18018-7 18018-8 18018-14 18018-15			
Lead (SW6010)				
Lead, mg/l	<0.0050	104 %	75-125 %	0.519
Dilution Factor	1	1	---	1
Prep Date	12.13.01	12.13.01	---	12.13.01
Analysis Date	12.14.01	12.14.01	---	12.14.01
Batch ID	1213G	1213G	---	1213G
Quantitation Factor	1	1	---	1
Cadmium (SW6010)				
Cadmium, mg/l	<0.0050	102 %	75-125 %	0.0512
Dilution Factor	1	1	---	1
Prep Date	12.13.01	12.13.01	---	12.13.01
Analysis Date	12.14.01	12.14.01	---	12.14.01
Batch ID	1213G	1213G	---	1213G
Quantitation Factor	1	1	---	1

SEVERN
TRENT
SERVICES

5102 LaRoche Avenue • Savannah, GA 31404 • Tel: 912 354 7858 • Fax: 912 352 0165 • www.stl-inc.com

STL Savannah

LOG NO: S1-18018

Received: 11 DEC 01

Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client
Code: 10032014

REPORT OF RESULTS

Page 4

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/	TIME SAMPLED	SDG#
18018-6	Method Blank			NL012
18018-7	Lab Control Standard & Recovery			NL012
18018-8	LCS Accuracy Control Limit (%R)			NL012
18018-14	Lab Control Standard Result			NL012
18018-15	Spike Amount Added, LCS			NL012
PARAMETER	18018-6	18018-7	18018-8	18018-14
Zinc (SW6010)				18018-15
Zinc, mg/l	<0.020	105 %	75-125 %	0.526
Dilution Factor	1	1	---	1
Prep Date	12.13.01	12.13.01	---	12.13.01
Analysis Date	12.14.01	12.14.01	---	12.14.01
Batch ID	1213G	1213G	---	1213G
Quantitation Factor	1	1	---	1

SEVERN
TRENT
SERVICES

5102 LaRoche Avenue • Savannah, GA 31404 • Tel: 912 354 7858 • Fax: 912 352 0165 • www.stl-inc.com

STL Savannah

LOG NO: S1-18018
Received: 11 DEC 01
Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client
Code: 10032014

REPORT OF RESULTS

Page 5

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	TIME SAMPLED	SDG#
18018-16	Reporting Limit (RL)		NL012
18018-17	Method Detection Limit (MDL)		NL012
PARAMETER		18018-16 18018-17	
Lead (SW6010)		0.0050	0.0015
Lead, mg/l			
Cadmium (SW6010)		0.0050	0.00071
Cadmium, mg/l			
Zinc (SW6010)		0.020	0.0059
Zinc, mg/l			

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.

SW-846, Test Methods for Evaluating Solid Waste, Third Edition, September 1986, and Updates I, II, IIA, IIB, and III.

Angie Weimerskirk
Angie Weimerskirk, Project Manager

Final Page Of Report



ARCADIS GERAGHTY & MILLER

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name CT 20103.0001 / NL Industries

Project Location Cognit Ctry, IL

Laboratory STL - Savannah

Project Manager Jack Kratzmeyer

Sampler(s)/Affiliation Strategic Visions and Target

Date/Time 11/26/2011 10:52 AM

Sample ID/Location Matrix Sampled Lab ID

1A-GMMW-1095-LFU-1201 L 1210101

1A-GMMW-109D-LFU-1201 L 1210-01

1A-GMMW-109X-LFU-1201 L 1210-02

1A-GMMW-112D-LFU-1201 L 1210-03

1A-GMMW-112S-LFU-1201 L 1210-04

Temp Blank L 1210-05

Temp Blank L 1210-06

Temp Blank L 1210-07

Temp Blank L 1210-08

Temp Blank L 1210-09

Temp Blank L 1210-10

Temp Blank L 1210-11

Temp Blank L 1210-12

Temp Blank L 1210-13

Temp Blank L 1210-14

Temp Blank L 1210-15

Temp Blank L 1210-16

Temp Blank L 1210-17

Temp Blank L 1210-18

Temp Blank L 1210-19

Temp Blank L 1210-20

Temp Blank L 1210-21

Temp Blank L 1210-22

Temp Blank L 1210-23

Temp Blank L 1210-24

Temp Blank L 1210-25

Temp Blank L 1210-26

Temp Blank L 1210-27

Temp Blank L 1210-28

Temp Blank L 1210-29

Temp Blank L 1210-30

Temp Blank L 1210-31

Temp Blank L 1210-32

Temp Blank L 1210-33

Temp Blank L 1210-34

Temp Blank L 1210-35

Temp Blank L 1210-36

Temp Blank L 1210-37

Temp Blank L 1210-38

Temp Blank L 1210-39

Temp Blank L 1210-40

Temp Blank L 1210-41

Temp Blank L 1210-42

Temp Blank L 1210-43

Temp Blank L 1210-44

Temp Blank L 1210-45

Temp Blank L 1210-46

Temp Blank L 1210-47

Temp Blank L 1210-48

Temp Blank L 1210-49

Temp Blank L 1210-50

Temp Blank L 1210-51

Temp Blank L 1210-52

Temp Blank L 1210-53

Temp Blank L 1210-54

Temp Blank L 1210-55

Temp Blank L 1210-56

Temp Blank L 1210-57

Temp Blank L 1210-58

Temp Blank L 1210-59

Temp Blank L 1210-60

Temp Blank L 1210-61

Temp Blank L 1210-62

Temp Blank L 1210-63

Temp Blank L 1210-64

Temp Blank L 1210-65

Temp Blank L 1210-66

Temp Blank L 1210-67

Temp Blank L 1210-68

Temp Blank L 1210-69

Temp Blank L 1210-70

Temp Blank L 1210-71

Temp Blank L 1210-72

Temp Blank L 1210-73

Temp Blank L 1210-74

Temp Blank L 1210-75

Temp Blank L 1210-76

Temp Blank L 1210-77

Temp Blank L 1210-78

Temp Blank L 1210-79

Temp Blank L 1210-80

Temp Blank L 1210-81

Temp Blank L 1210-82

Temp Blank L 1210-83

Temp Blank L 1210-84

Temp Blank L 1210-85

Temp Blank L 1210-86

Temp Blank L 1210-87

Temp Blank L 1210-88

Temp Blank L 1210-89

Temp Blank L 1210-90

Temp Blank L 1210-91

Temp Blank L 1210-92

Temp Blank L 1210-93

Temp Blank L 1210-94

Temp Blank L 1210-95

Temp Blank L 1210-96

Temp Blank L 1210-97

Temp Blank L 1210-98

Temp Blank L 1210-99

Temp Blank L 1210-100

Temp Blank L 1210-101

Temp Blank L 1210-102

Temp Blank L 1210-103

Temp Blank L 1210-104

Temp Blank L 1210-105

Temp Blank L 1210-106

Temp Blank L 1210-107

Temp Blank L 1210-108

Temp Blank L 1210-109

Temp Blank L 1210-110

Temp Blank L 1210-111

Temp Blank L 1210-112

Temp Blank L 1210-113

Temp Blank L 1210-114

Temp Blank L 1210-115

Temp Blank L 1210-116

Temp Blank L 1210-117

Temp Blank L 1210-118

Temp Blank L 1210-119

Temp Blank L 1210-120

Temp Blank L 1210-121

Temp Blank L 1210-122

Temp Blank L 1210-123

Temp Blank L 1210-124

Temp Blank L 1210-125

Temp Blank L 1210-126

Temp Blank L 1210-127

Temp Blank L 1210-128

Temp Blank L 1210-129

Temp Blank L 1210-130

Temp Blank L 1210-131

Temp Blank L 1210-132

Temp Blank L 1210-133

Temp Blank L 1210-134

Temp Blank L 1210-135

Temp Blank L 1210-136

Temp Blank L 1210-137

Temp Blank L 1210-138

Temp Blank L 1210-139

Temp Blank L 1210-140

Temp Blank L 1210-141

Temp Blank L 1210-142

Temp Blank L 1210-143

Temp Blank L 1210-144

Temp Blank L 1210-145

Temp Blank L 1210-146

Temp Blank L 1210-147

Temp Blank L 1210-148

Temp Blank L 1210-149

Temp Blank L 1210-150

Temp Blank L 1210-151

Temp Blank L 1210-152

Temp Blank L 1210-153

Temp Blank L 1210-154

Temp Blank L 1210-155

Temp Blank L 1210-156

Temp Blank L 1210-157

Temp Blank L 1210-158

Temp Blank L 1210-159

Temp Blank L 1210-160

Temp Blank L 1210-161

Temp Blank L 1210-162

Temp Blank L 1210-163

Temp Blank L 1210-164

Temp Blank L 1210-165

Temp Blank L 1210-166

Temp Blank L 1210-167

Temp Blank L 1210-168

Temp Blank L 1210-169

Temp Blank L 1210-170

Temp Blank L 1210-171

Temp Blank L 1210-172

Temp Blank L 1210-173

Temp Blank L 1210-174

Temp Blank L 1210-175

Temp Blank L 1210-176

Temp Blank L 1210-177

Temp Blank L 1210-178

Temp Blank L 1210-179

Temp Blank L 1210-180

Temp Blank L 1210-181

Temp Blank L 1210-182

Temp Blank L 1210-183

Temp Blank L 1210-184

Temp Blank L 1210-185

Temp Blank L 1210-186

Temp Blank L 1210-187

Temp Blank L 1210-188

Temp Blank L 1210-189

Temp Blank L 1210-190

Temp Blank L 1210-191

Temp Blank L 1210-192

Temp Blank L 1210-193

Temp Blank L 1210-194

Temp Blank L 1210-195

Temp Blank L 1210-196

Temp Blank L 1210-197

Temp Blank L 1210-198

Temp Blank L 1210-199

Temp Blank L 1210-200

Temp Blank L 1210-201

Temp Blank L 1210-202

Temp Blank L 1210-203

Temp Blank L 1210-204

Temp Blank L 1210-205

Temp Blank L 1210-206

Temp Blank L 1210-207

Temp Blank L 1210-208

Temp Blank L 1210-209

Temp Blank L 1210-210

Temp Blank L 1210-211

Temp Blank L 12

FedEx. USA Airbill
Express

FedEx
Tracking
Number

832528867381

1 From This portion can be removed for Recipient's records.

Date 12-10-01 FedEx Tracking Number 832528867381

Sender's Name Stephen Vasas Phone 312 263-6703

Company ARCADIS GERAGHTY & MILLER INC

Address 35 E WACKER DR STE 1000

Dept/Floor/Suite/Room

City CHICAGO State IL ZIP 60601

2 Your Internal Billing Reference CI001003.0001(0B)

3 To Recipient's Name Phone 712 354-7858

Company STL-Savannah
5102 LaRochr Ave

To "HOLD" at FedEx location, print FedEx address.

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address Savannah State GA ZIP 31404

Dept/Floor/Suite/Room



0199355060

Recipients Copy

FEDEX

4a Express Package Service

Packages up to 150 lbs.

Delivery commitment may be later in some areas.
Next business morning

FedEx Priority Overnight
Next business morning

FedEx Standard Overnight
Next business afternoon

FedEx First Overnight
Earlier next business morning
Delivery to select locations

FedEx 2Day
Second business day

FedEx Express Saver
Third business day

NEW FedEx Extra Hours
Later drop-off with next business
afternoon delivery for select locations

4b Express Freight Service

Packages over 150 lbs.

Delivery commitment may be later in some areas.
Second business day

FedEx 1Day Freight*
Next business day

FedEx 2Day Freight
Second business day

FedEx 3Day Freight
Third business day

* Call for Confirmation

* Declared value limit \$500

5 Packaging

FedEx Envelope*

FedEx Pak*
Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak

Other Pkg.
Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

Includes FedEx address in Section 1

SATURDAY Delivery

HOLD Weeklyday
at FedEx Locabon

HOLD Saturday
at FedEx Location

Available only for FedEx Priority
Overnight and FedEx 2Day
to select ZIP codes

Not available for
FedEx First Overnight

Available only for
FedEx Priority Overnight
and FedEx 2Day to
select locations

Does this shipment contain dangerous goods?

One box must be checked.

No Yes
As per attached
Shipper's Declaration
not required

Yes
Shipper's Declaration
not required

Dry Ice
Dry Ice, 9, UN 1845
 Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below

Recipient

Third Party

Credit Card

Check/R.D.
Acct. No.

Cash/Check

Total Packages

Total Weight

Total Charges

Dangerous Goods (incl. Dry Ice) cannot be shipped in FedEx packaging or with
Fragile Endorsements service.

Credit Card Auth.

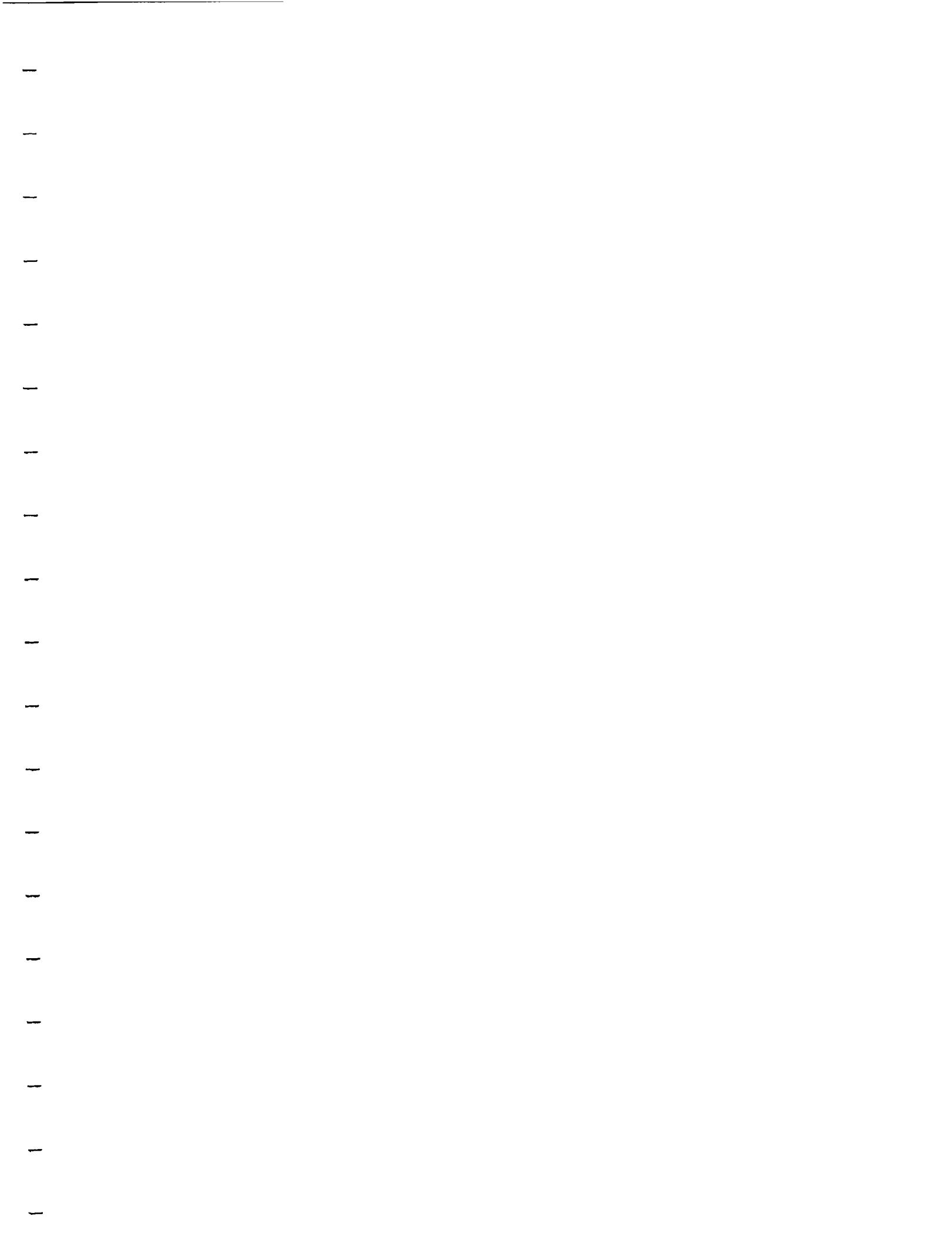
8 Release Signature Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature
and agree to indemnify and hold us harmless from any resulting claims.

Questions? Visit our Web site at fedex.com

Rev Date 7/01 • Part #157252 • ©1994-2001 FedEx • PRINTED IN U.S.A. GDFE 1001

447



LOG NO: S1-18063
Received: 12 DEC 01
Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client
Code: 10032014

REPORT OF RESULTS

DATE/

TIME SAMPLED

SDG#

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES				
18063-1	GMMW103R (12/11/01)				12-11-01/08:36 NL012
18063-2	GMMW113S (12/11/01)				12-11-01/09:35 NL012
18063-3	GMMW113D (12/11/01)				12-11-01/10:30 NL012
18063-4	MW-102 (12/11/01)				12-11-01/11:12 NL012
18063-5	GMMW126 (12/11/01)				12-11-01/12:02 NL012

PARAMETER	18063-1	18063-2	18063-3	18063-4	18063-5
-----------	---------	---------	---------	---------	---------

Lead (SW6010)

Lead, mg/l	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dilution Factor	1	1	1	1	1
Prep Date	12.14.01	12.14.01	12.14.01	12.14.01	12.14.01
Analysis Date	12.18.01	12.18.01	12.18.01	12.18.01	12.18.01
Batch ID	1214I	1214I	1214I	1214I	1214I
Quantitation Factor	1	1	1	1	1

Cadmium (SW6010)

Cadmium, mg/l	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dilution Factor	1	1	1	1	1
Prep Date	12.14.01	12.14.01	12.14.01	12.14.01	12.14.01
Analysis Date	12.18.01	12.18.01	12.18.01	12.18.01	12.18.01
Batch ID	1214I	1214I	1214I	1214I	1214I
Quantitation Factor	1	1	1	1	1

LOG NO: S1-18063

Received: 12 DEC 01

Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client

Code: 10032014

Page 2

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED	SDG#		
18063-1	GMMW103R (12/11/01)	12-11-01/08:36	NL012		
18063-2	GMMW113S (12/11/01)	12-11-01/09:35	NL012		
18063-3	GMMW113D (12/11/01)	12-11-01/10:30	NL012		
18063-4	MW-102 (12/11/01)	12-11-01/11:12	NL012		
18063-5	GMMW126 (12/11/01)	12-11-01/12:02	NL012		
PARAMETER	18063-1 18063-2 18063-3 18063-4 18063-5				
Zinc (SW6010)					
Zinc, mg/l	<0.020	<0.020	<0.020	<0.020	<0.020
Dilution Factor	1	1	1	1	1
Prep Date	12.14.01	12.14.01	12.14.01	12.14.01	12.14.01
Analysis Date	12.18.01	12.18.01	12.18.01	12.18.01	12.18.01
Batch ID	1214I	1214I	1214I	1214I	1214I
Quantitation Factor	1	1	1	1	1

STL Savannah

LOG NO: S1-18063

Received: 12 DEC 01

Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client

Code: 10032014

Page 3

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/	TIME SAMPLED	SDG#
18063-6	GMMW123 (12/11/01)	12-11-01/13:56	NL012	
18063-7	MW-101 (12/11/01)	12-11-01/14:48	NL012	
18063-8	MW-101-DUP (12/11/01)	12-11-01/14:48	NL012	
18063-9	GMMW124D (12/11/01)	12-11-01/16:02	NL012	
18063-10	GMMW124S (12/11/01)	12-11-01/15:33	NL012	

PARAMETER	18063-6	18063-7	18063-8	18063-9	18063-10
-----------	---------	---------	---------	---------	----------

Lead (SW6010)

Lead, mg/l	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dilution Factor	1	1	1	1	1
Prep Date	12.14.01	12.14.01	12.14.01	12.14.01	12.14.01
Analysis Date	12.18.01	12.18.01	12.18.01	12.18.01	12.18.01
Batch ID	1214I	1214I	1214I	1214I	1214I
Quantitation Factor	1	1	1	1	1

Cadmium (SW6010)

Cadmium, mg/l	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Dilution Factor	1	1	1	1	1
Prep Date	12.14.01	12.14.01	12.14.01	12.14.01	12.14.01
Analysis Date	12.18.01	12.18.01	12.18.01	12.18.01	12.18.01
Batch ID	1214I	1214I	1214I	1214I	1214I
Quantitation Factor	1	1	1	1	1

SEVERN
TRENT
SERVICES

5102 LaRoche Avenue • Savannah, GA 31404 • Tel: 912 354 7858 • Fax: 912 352 0165 • www.stl-inc.com

STL Savannah

LOG NO: S1-18063

Received: 12 DEC 01

Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site

Sampled By: Client

Code: 10032014

Page 4

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/	TIME SAMPLED	SDG#
18063-6	GMMW123 (12/11/01)	12-11-01/13:56	NL012	
18063-7	MW-101 (12/11/01)	12-11-01/14:48	NL012	
18063-8	MW-101-DUP (12/11/01)	12-11-01/14:48	NL012	
18063-9	GMMW124D (12/11/01)	12-11-01/16:02	NL012	
18063-10	GMMW124S (12/11/01)	12-11-01/15:33	NL012	

PARAMETER	18063-6	18063-7	18063-8	18063-9	18063-10
Zinc (SW6010)					
Zinc, mg/l	<0.020	<0.020	<0.020	<0.020	<0.020
Dilution Factor	1	1	1	1	1
Prep Date	12.14.01	12.14.01	12.14.01	12.14.01	12.14.01
Analysis Date	12.18.01	12.18.01	12.18.01	12.18.01	12.18.01
Batch ID	1214I	1214I	1214I	1214I	1214I
Quantitation Factor	1	1	1	1	1

LOG NO: S1-18063

Received: 12 DEC 01

Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site

Sampled By: Client

Code: 10032014

Page 5

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/	TIME SAMPLED	SDG#
18063-11	GMMW115S (12/11/01)	12-11-01/16:46	NL012	
18063-12	GMMW115D (12/11/01)	12-11-01/17:16	NL012	
18063-13	FB-1 (12/11/01)	12-11-01		NL012
PARAMETER		18063-11	18063-12	18063-13
Lead (SW6010)				
Lead, mg/l	<0.0050	<0.0050	<0.0050	
Dilution Factor	1	1	1	
Prep Date	12.14.01	12.14.01	12.14.01	
Analysis Date	12.18.01	12.18.01	12.18.01	
Batch ID	1214I	1214I	1214I	
Quantitation Factor	1	1	1	
Cadmium (SW6010)				
Cadmium, mg/l	<0.0050	<0.0050	<0.0050	
Dilution Factor	1	1	1	
Prep Date	12.14.01	12.14.01	12.14.01	
Analysis Date	12.18.01	12.18.01	12.18.01	
Batch ID	1214I	1214I	1214I	
Quantitation Factor	1	1	1	
Zinc (SW6010)				
Zinc, mg/l	<0.020	<0.020	<0.020	
Dilution Factor	1	1	1	
Prep Date	12.14.01	12.14.01	12.14.01	
Analysis Date	12.18.01	12.18.01	12.18.01	
Batch ID	1214I	1214I	1214I	
Quantitation Factor	1	1	1	

SEVERN
TRENT
SERVICES

5102 LaRoche Avenue • Savannah, GA 31404 • Tel: 912 354 7858 • Fax: 912 352 0165 • www.stl-inc.com

STL Savannah

LOG NO: S1-18063

Received: 12 DEC 01

Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site

Sampled By: Client

Code: 10032014

Page 6

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	TIME SAMPLED	DATE/	SDG#
18063-14	Method Blank			NL012
18063-15	Lab Control Standard % Recovery			NL012
18063-16	LCS Accuracy Control Limit (%R)			NL012
18063-17	Lab Control Standard Result			NL012
18063-18	Spike Amount Added, LCS			NL012
PARAMETER	18063-14	18063-15	18063-16	18063-17
Lead (SW6010)				18063-18
Lead, mg/l	<0.0050	104 %	75-125 %	0.521
Dilution Factor	1	1	---	1
Prep Date	12.14.01	12.14.01	---	12.14.01
Analysis Date	12.18.01	12.18.01	---	12.18.01
Batch ID	1214I	1214I	---	1214I
Quantitation Factor	1	1	---	1
Cadmium (SW6010)				
Cadmium, mg/l	<0.0050	102 %	75-125 %	0.0510
Dilution Factor	1	1	---	1
Prep Date	12.14.01	12.14.01	---	12.14.01
Analysis Date	12.18.01	12.18.01	---	12.18.01
Batch ID	1214I	1214I	---	1214I
Quantitation Factor	1	1	---	1

SEVERN
TRENT
SERVICES

5102 LaRoche Avenue • Savannah, GA 31404 • Tel: 912 354 7858 • Fax: 912 352 0165 • www.stl-inc.com

STL Savannah

LOG NO: S1-18063

Received: 12 DEC 01

Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site

Sampled By: Client

Code: 10032014

Page 7

REPORT OF RESULTS

DATE/

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	TIME SAMPLED	SDG#
18063-14	Method Blank		NL012
18063-15	Lab Control Standard & Recovery		NL012
18063-16	LCS Accuracy Control Limit (%R)		NL012
18063-17	Lab Control Standard Result		NL012
18063-18	Spike Amount Added, LCS		NL012

PARAMETER	18063-14	18063-15	18063-16	18063-17	18063-18
-----------	----------	----------	----------	----------	----------

Zinc (SW6010)					
Zinc, mg/l	<0.020	107 %	75-125 %	0.536	0.500
Dilution Factor	1	1	---	1	---
Prep Date	12.14.01	12.14.01	---	12.14.01	---
Analysis Date	12.18.01	12.18.01	---	12.18.01	---
Batch ID	1214I	1214I	---	1214I	---
Quantitation Factor	1	1	---	1	---

SEVERN
TRENT
SERVICES

5102 LaRoche Avenue • Savannah, GA 31404 • Tel: 912 354 7858 • Fax: 912 352 0165 • www.stl-inc.com

STL Savannah

LOG NO: S1-18063

Received: 12 DEC 01

Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client

Code: 10032014

Page 8

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/	TIME SAMPLED	SDG#
18063-19	Reporting Limit (RL)			NL012
18063-20	Method Detection Limit (MDL)			NL012
PARAMETER		18063-19	18063-20	
Lead (SW6010)				
Lead, mg/l		0.0050	0.0015	
Cadmium (SW6010)				
Cadmium, mg/l		0.0050	0.00071	
Zinc (SW6010)				
Zinc, mg/l		0.020	0.0059	

LOG NO: S1-18063

Received: 12 DEC 01

Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site

Sampled By: Client

Code: 10032014

Page 9

REPORT OF RESULTS

DATE/

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	TIME SAMPLED	SDG#
18063-21	Matrix Spike Result (GMMW-123)		NL012
18063-22	MS % Recovery		NL012
18063-23	Matrix Spike Duplicate Result (GMMW-123)		NL012
18063-24	MSD % Recovery		NL012
18063-25	MS Accuracy Advisory Limit (%R)		NL012

PARAMETER	18063-21	18063-22	18063-23	18063-24	18063-25
-----------	----------	----------	----------	----------	----------

Lead (SW6010)					
Lead, mg/l	0.525	105 %	0.515	103 %	75-125 %
Dilution Factor	1	1	1	1	---
Prep Date	12.14.01	12.14.01	12.14.01	12.14.01	---
Analysis Date	12.18.01	12.18.01	12.18.01	12.18.01	---
Batch ID	1214I	1214I	1214I	1214I	---
Quantitation Factor	1	1	1	1	---

Cadmium (SW6010)					
Cadmium, mg/l	0.0507	101 %	0.0499	100 %	75-125 %
Dilution Factor	1	1	1	1	---
Prep Date	12.14.01	12.14.01	12.14.01	12.14.01	---
Analysis Date	12.18.01	12.18.01	12.18.01	12.18.01	---
Batch ID	1214I	1214I	1214I	1214I	---
Quantitation Factor	1	1	1	1	---

SEVERN
TRENT
SERVICES

5102 LaRoche Avenue • Savannah, GA 31404 • Tel: 912 354 7858 • Fax: 912 352 0165 • www.stlinc.com

STL Savannah

LOG NO: S1-18063

Received: 12 DEC 01

Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client

Code: 10032014

Page 10

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	TIME SAMPLED	DATE /	SDG#
18063-21	Matrix Spike Result (GMMW-123)			NL012
18063-22	MS % Recovery			NL012
18063-23	Matrix Spike Duplicate Result (GMMW-123)			NL012
18063-24	MSD % Recovery			NL012
18063-25	MS Accuracy Advisory Limit (%R)			NL012
PARAMETER	18063-21	18063-22	18063-23	18063-24
Zinc (SW6010)				18063-25
Zinc, mg/l	0.535	107 %	0.524	104 %
Dilution Factor	1	1	1	1
Prep Date	12.14.01	12.14.01	12.14.01	12.14.01
Analysis Date	12.18.01	12.18.01	12.18.01	12.18.01
Batch ID	1214I	1214I	1214I	1214I
Quantitation Factor	1	1	1	1

LOG NO: S1-18063
Received: 12 DEC 01
Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client
Code: 10102014

REPORT OF RESULTS

Page 11

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	TIME SAMPLED	DATE/	SDG#
18063-26	Spike Amount Added, MS			NL012
18063-27	Spike Amount Added, MSD			NL012
18063-28	Precision (%RPD) MS/MSD			NL012
18063-29	MS Precision Advisory Limit (%RPD)			NL012
PARAMETER		18063-26	18063-27	18063-28
Lead (SW6010)				18063-29
Lead, mg/l	0.500	0.500	1.8 %	<20 %
Dilution Factor	---	---	1	1
Prep Date	---	---	12.14.01	12.14.01
Analysis Date	---	---	12.18.01	12.18.01
Batch ID	---	---	1214I	1214I
Quantitation Factor	---	---	1	1
Cadmium (SW6010)				
Cadmium, mg/l	0.0500	0.0500	1.6 %	<20 %
Dilution Factor	---	---	1	1
Prep Date	---	---	12.14.01	12.14.01
Analysis Date	---	---	12.18.01	12.18.01
Batch ID	---	---	1214I	1214I
Quantitation Factor	---	---	1	1
Zinc (SW6010)				
Zinc, mg/l	0.500	0.500	2.1 %	<20 %
Dilution Factor	---	---	1	1
Prep Date	---	---	12.14.01	12.14.01
Analysis Date	---	---	12.18.01	12.18.01
Batch ID	---	---	1214I	1214I
Quantitation Factor	---	---	1	1

STL Savannah

LOG NO: S1-18063

Received: 12 DEC 01

Reported: 31 DEC 01

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client

Code: 10032014

Page 12

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/	TIME SAMPLED	SDG#
18063-26	Spike Amount Added, MS			NL012
18063-27	Spike Amount Added, MSD			NL012
18063-28	Precision (%RPD) MS/MSD			NL012
18063-29	MS Precision Advisory Limit (%RPD)			NL012
PARAMETER		18063-26	18063-27	18063-28
				18063-29

These test results meet all the requirements of NELAC. All questions regarding this test report should be directed to the STL Project Manager who signed this test report.

Methods: EPA SW-846, Update III.

SW-846, Test Methods for Evaluating Solid Waste, Third Edition, September 1986, and Updates I, II, IIA, IIB, and III.

Angie Weimerskirk

Angie Weimerskirk, Project Manager

Final Page Of Report

FedEx. USA Airbill
Express

FedEx
Tracking
Number

832528867451

832528867451

1 From This portion can be removed for Recipient's records.

Date 11-2001

FedEx Tracking Number

Shipper's Name Eric Mousbrugger

Phone 312 263-6703

Company ARCADIS GERAGHTY & MILLER INC

Address 35 E WACKER DR STE 1000

Dept/Floor/Suite/Room

City CHICAGO

State IL ZIP 60601

2 Your Internal Billing Reference

CI 001003.0001 (OB)

To
Recipient's
Name

912 354-7858

Phone

Company

STL - Savannah

502 LaRoche Ave

Address

To "HOLD" at FedEx location, print FedEx address.

We cannot deliver to P.O. boxes or P.O. ZIP codes.

City

Savannah

State

GA

ZIP

31404

Dept/Floor/Suite/Room

8325 2886 7451



0199355060

Recipients Copy

4a Express Package Service

Packages up to 150 lbs.

Delivery commitment may be later in some areas.

FedEx Priority Overnight
Next business morning

FedEx Standard Overnight
Next business afternoon

FedEx First Overnight
Earliest next business morning
delivery to select locations

FedEx 2Day
Second business day
FedEx Envelope rate not available. Minimum charge. One-pound rate

FedEx Express Saver
Third business day

NEW FedEx Extra Hours
Last drop-off with next business
afternoon delivery for select locations

4b Express Freight Service

Packages over 150 lbs.

Delivery commitment may be later in some areas.

FedEx 1Day Freight*
Next business day

FedEx 2Day Freight
Second business day

FedEx 30Day Freight
Third business day

* Call for Confirmation

* Declared value limit \$500

5 Packaging

FedEx Envelope*

FedEx Pak*
Includes FedEx Small Pak, FedEx Large Pak, and FedEx Shrink Pak

Other Pkg.
Includes FedEx Box, FedEx Tube, and customer prop.

6 Special Handling

Include FedEx address in Section 1

SATURDAY Delivery

HOLD Weekly
at FedEx Location
Not available for
FedEx First Overnight
or select ZIP codes

HOLD Saturday
at FedEx Location
Available only for
FedEx Priority Overnight
and FedEx 2Day to
select locations

Does this shipment contain dangerous goods?

No

Yes

As per attached
Shipper's Declaration
not required

Dangerous Goods Info: Dry Ice cannot be shipped in FedEx packaging or with
FedEx Extra Hours service.

Yes

Shipper's Declaration
not required

Dry Ice

Dry Ice
Dry Ice, LN, UN 1945

Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below.

Sender

Recipient

Third Party

Credit Card

Obtain Recp.
Acct. No.

Cash/Check

Total Packages

Total Weight

97

Total Charges

\$15.00

Your liability is limited to \$100 unless you declare a higher value. See the FedEx Service Guide for details.

8 Release Signature

Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature
and agree to indemnify and hold us harmless from any resulting claims.
Questions? Visit our Web site at fedex.com
or call 1-800-Go-FedEx 800.463.3238.
Rev. Date 7/01 • Part #15252 • ©1994-2001 FedEx • PRINTED IN U.S.A. QBP/E 1001

447



LOG NO: S1-18117

Received: 13 DEC 01

Reported: 02 JAN 02

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client

Code: 10192014

Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/	TIME SAMPLED	SDG#
18117-1	GMMW108S (12/12/01)	12-12-01/11:45	NL013	
18117-2	MW-108D (12/12/01)	12-12-01/12:16	NL013	
18117-3	GMMW108X (12/12/01)	12-12-01/12:53	NL013	
PARAMETER		18117-1	18117-2	18117-3
Lead (SW6010)				
Lead, mg/l	<0.0050	<0.010*F65	<0.0050	
Dilution Factor	1	2		1
Prep Date	12.19.01	12.19.01	12.19.01	
Analysis Date	12.20.01	12.21.01	12.20.01	
Batch ID	1219H	1219H	1219H	
Quantitation Factor	1	2		1
Cadmium (SW6010)				
Cadmium, mg/l	2.3	6.9	<0.0050	
Dilution Factor	1	2		1
Prep Date	12.19.01	12.19.01	12.19.01	
Analysis Date	12.20.01	12.21.01	12.20.01	
Batch ID	1219H	1219H	1219H	
Quantitation Factor	1	2		1
Zinc (SW6010)				
Zinc, mg/l	14	32	0.047	
Dilution Factor	1	2		1
Prep Date	12.19.01	12.19.01	12.19.01	
Analysis Date	12.20.01	12.21.01	12.20.01	
Batch ID	1219H	1219H	1219H	
Quantitation Factor	1	1		1

LOG NO: S1-18117

Received: 13 DEC 01

Reported: 02 JAN 02

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site

Sampled By: Client

Code: 10192014

Page 2

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/	TIME SAMPLED	SDG#
18117-4	GMMW120 (12/12/01)		12-12-01/08:40	NL013
18117-5	GMMW122 (12/12/01)		12-12-01/09:34	NL013
18117-6	GMMW121 (12/12/01)		12-12-01/10:27	NL013
18117-7	GMMW119 (12/12/01)		12-12-01/14:55	NL013
18117-8	GMMW118 (12/12/01)		12-12-01/15:41	NL013
PARAMETER	18117-4	18117-5	18117-6	18117-7
Lead (SW6010)				18117-8
Lead, mg/l	<0.0050	<0.0050	<0.0050	<0.0050
Dilution Factor	1	1	1	1
Prep Date	12.19.01	12.19.01	12.19.01	12.19.01
Analysis Date	12.20.01	12.20.01	12.20.01	12.20.01
Batch ID	1219H	1219H	1219H	1219H
Quantitation Factor	1	1	1	1

STL Savannah

LOG NO: S1-18117
Received: 13 DEC 01
Reported: 02 JAN 02

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client

Code: 10192014

Page 3

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/	TIME SAMPLED	SDG#
18117-9	GMMW118 DUPLICATE (12/12/01)	12-12-01/15:42	NL013	
18117-10	GMMW117 (12/12/01)	12-12-01/16:34	NL013	
18117-11	FB-1 (12/12/01)	12-12-01		NL013
PARAMETER		18117-9	18117-10	18117-11
Lead (SW6010)				
Lead, mg/l	<0.0050	<0.0050	<0.0050	
Dilution Factor	1	1	1	
Prep Date	12.19.01	12.19.01	12.19.01	
Analysis Date	12.20.01	12.20.01	12.20.01	
Batch ID	1219H	1219H	1219H	
Quantitation Factor	1	1	1	

LOG NO: S1-18117
Received: 13 DEC 01
Reported: 02 JAN 02

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site

Sampled By: Client

Code: 10192014

Page 4

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE /	TIME SAMPLED	SDG#
18117-12	Method Blank			NL013
18117-13	Lab Control Standard % Recovery			NL013
18117-14	LCS Accuracy Control Limit (%R)			NL013
18117-15	Lab Control Standard Result			NL013
18117-16	Spike Amount Added, LCS			NL013
PARAMETER	18117-12	18117-13	18117-14	18117-15
Lead (SW6010)				18117-16
Lead, mg/l	<0.0050	101 %	75-125 %	0.507
Dilution Factor	1	1	---	1
Prep Date	12.19.01	12.19.01	---	12.19.01
Analysis Date	12.20.01	12.20.01	---	12.20.01
Batch ID	1219H	1219H	---	1219H
Quantitation Factor	1	1	---	1
Cadmium (SW6010)				
Cadmium, mg/l	<0.0050	102 %	75-125 %	0.0512
Dilution Factor	1	1	---	1
Prep Date	12.19.01	12.19.01	---	12.19.01
Analysis Date	12.20.01	12.20.01	---	12.20.01
Batch ID	1219H	1219H	---	1219H
Quantitation Factor	1	1	---	1

SEVERN
TRENT
SERVICES

5102 LaRoche Avenue • Savannah, GA 31404 • Tel: 912 354 7858 • Fax: 912 352 0165 • www.stl-inc.com

STL Savannah

LOG NO: S1-18117

Received: 13 DEC 01

Reported: 02 JAN 02

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site

Sampled By: Client

Code: 10192014

Page 5

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	TIME SAMPLED	SDG#		
18117-12	Method Blank		NL013		
18117-13	Lab Control Standard % Recovery		NL013		
18117-14	LCS Accuracy Control Limit (%R)		NL013		
18117-15	Lab Control Standard Result		NL013		
18117-16	Spike Amount Added, LCS		NL013		
PARAMETER	18117-12	18117-13	18117-14		
Zinc (SW6010)			18117-15	18117-16	
Zinc, mg/l	<0.020	93 %	75-125 %	0.464	0.500
Dilution Factor	1	1	---	1	---
Prep Date	12.19.01	12.19.01	---	12.19.01	---
Analysis Date	12.20.01	12.20.01	---	12.20.01	---
Batch ID	1219H	1219H	---	1219H	---
Quantitation Factor	1	1	---	1	---

STL Savannah

LOG NO: S1-18117
Received: 13 DEC 01
Reported: 02 JAN 02

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client
Code: 10192014

REPORT OF RESULTS

DATE/

SDG#

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	TIME SAMPLED	SDG#
18117-17	Reporting Limit (RL)		NL013
18117-18	Method Detection Limit (MDL)		NL013

PARAMETER	18117-17	18117-18
-----------	----------	----------

Lead (SW6010)		
Lead, mg/l	0.0050	0.0015

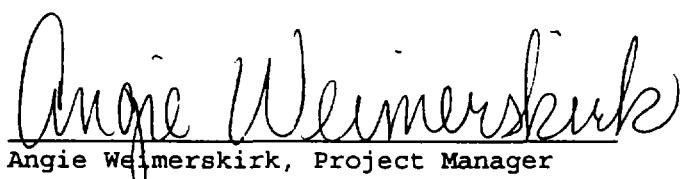
Cadmium (SW6010)		
Cadmium, mg/l	0.0050	0.00071

Zinc (SW6010)		
Zinc, mg/l	0.020	0.0059

SW-846, Test Methods for Evaluating Solid Waste, Third Edition,
September 1986, and Updates I, II, IIA, IIB, and III.

*F65 = Elevated detection limits were reported due to sample matrix
interference which required sample or extract dilution.

These test results meet all the requirements of NELAC. All questions
regarding this test report should be directed to the STL project manager
who signed this test report.



Angie Weimerskirk

Angie Weimerskirk, Project Manager

Final Page Of Report

RECIPIENT: PEEL HERE

FedEx USA Airbill

Express

FedEx
Tracking
Number

832528867392

1 From This portion can be removed for Recipient's records.

Date 12.12.2001 FedEx Tracking Number 832528867392

Sender's Name

Eric Moosbrugger

Phone 312 263-6703

Company ARCADIS GERAGHTY & MILLER INC

Address 35 E WACKER DR STE 1000

City CHICAGO

State IL

ZIP 60601

2 Your Internal Billing Reference

3 To
Recipient's Name

Phone

-912 354-7858

Company

STL Savannah

5102 LaRoche Ave

Address

To "HOLD" at FedEx location, print FedEx address.

We cannot deliver to P.O. boxes or P.O. ZIP codes.

City

Savannah

State

GA

ZIP

31404

Dept./Phone/Sales Rep.



8325 2886 7392

0199355060

* Our liability is limited to \$100 unless you declare a higher value. See the FedEx Service Guide for details.

8 Release Signature

Sign to indicate delivery without securing signature.

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims. Questions? Visit our Web site at fedex.com or call 1-800-Go-FedEx® 800.463.3338. Rev. Date 7/01 Part #157256 ©1994-2001 FedEx. PRINTED IN U.S.A. GSPE 1061

447



Recipient's Copy

Packages up to 150 lbs.

Delivery commitment may be later in some areas.
FedEx First Overnight
Next business morning

Later drop-off with next business

delivery to select locations

4a Express Package Service

FedEx Priority Overnight
Next business morning

FedEx Standard Overnight
Next business afternoon

FedEx First Overnight
Earlier next business morning

FedEx 2 Day
Second business day

FedEx Express Saver
Third business day
FedEx Envelope rate not available. Minimum charge. One-pound rate

NEW FedEx Extra Hours
Later drop-off with next business
attention delivery for select locations

4b Express Freight Service

FedEx 1 Day Freight*

FedEx 2 Day Freight
Second business day

FedEx 3 Day Freight
Third business day

* Call for Confirmation

* Declared value limit \$500

5 Packaging

FedEx Envelope*

FedEx Pak*
Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak

Other Pkg.
Includes FedEx Box, FedEx Tube, and customer pkg

6 Special Handling

SATURDAY Delivery
Available only for FedEx Priority Overnight and FedEx 2 Day

HOLD Weekday
at FedEx Location
Not available for FedEx First Overnight

HOLD Saturday
at FedEx Location
Available only for FedEx Priority Overnight and FedEx 2 Day to select locations

Does this shipment contain dangerous goods?

One box must be checked.

No Yes
As per specified
Shipper's Declaration
not required

Yes
Shipper's Declaration
not required

Dangerous Goods Ind. Dry ice cannot be shipped in FedEx packages or with FedEx Extra Hours service.

Dry Ice
Dry Ice, S. UN 1995
 Cargo Aircraft Only

7 Payment Bill to:

Enter FedEx Acct. No. or Credit Card No. below.

Sender
Acct. No. in Section
I will be billed.

Recipient
 Third Party

Credit Card

Obtain Recp.
Acct. No.
 Cash/Check

Total Packages

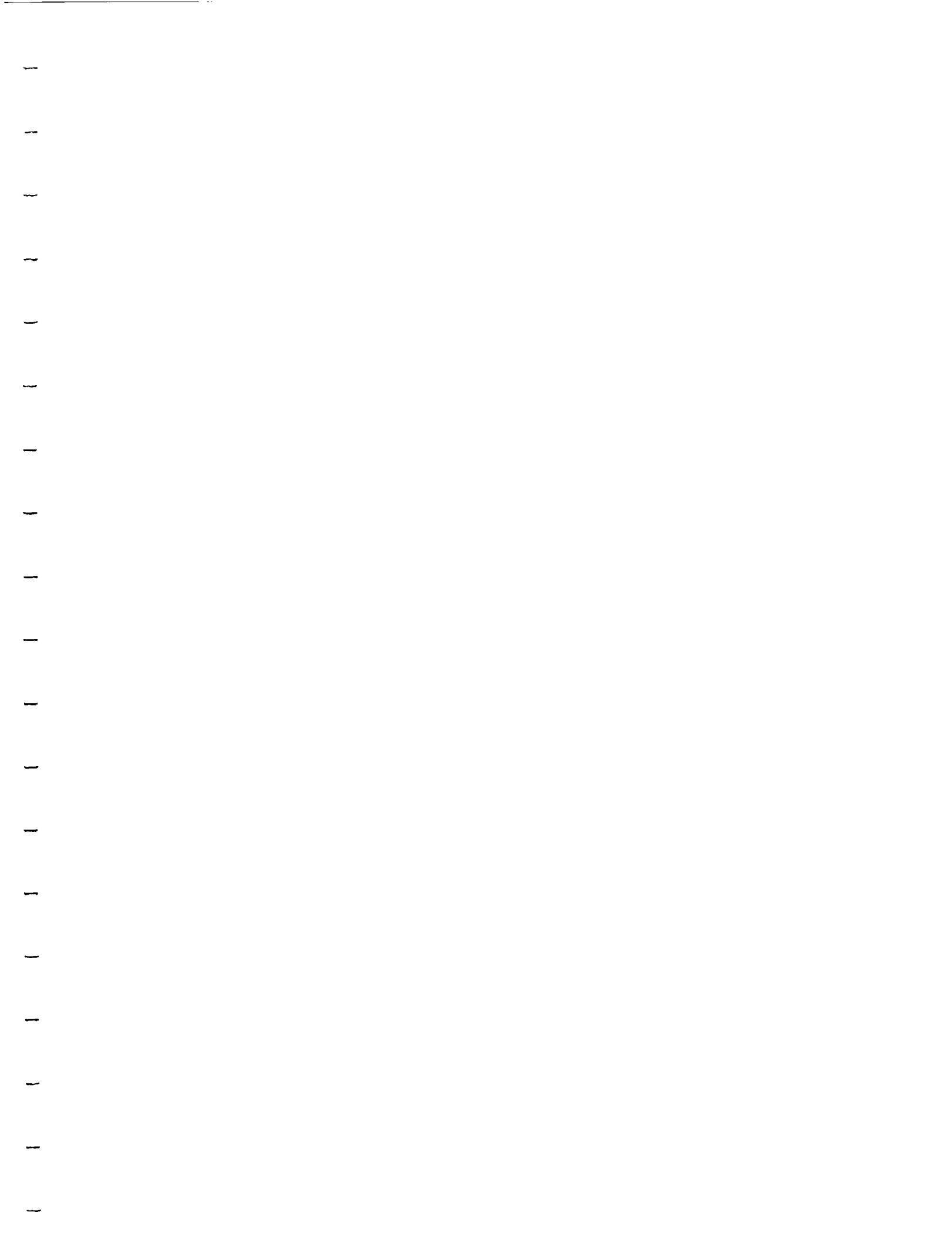
Total Weight

1

26

Total Charges

Credit Card Auth.



LOG NO: S1-18143

Received: 14 DEC 01

Reported: 02 JAN 02

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client

Code: 10192014

Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/	TIME SAMPLED	SDG#
18143-1	GMMW116D (12/13/01)		12-13-01/08:36	NL013
18143-2	GMMW116S (12/13/01)		12-13-01/09:00	NL013
18143-3	GMMW125 (12/13/01)		12-13-01/09:39	NL013
18143-4	MW-104 (12/13/01)		12-13-01/10:29	NL013
18143-5	MW-107S (12/13/01)		12-13-01/11:16	NL013
PARAMETER	18143-1	18143-2	18143-3	18143-4
Lead (SW6010)				18143-5
Lead, mg/l	<0.0050	<0.0050	<0.0050	<0.0050
Dilution Factor	1	1	1	1
Prep Date	12.19.01	12.19.01	12.19.01	12.19.01
Analysis Date	12.20.01	12.20.01	12.20.01	12.20.01
Batch ID	1219I	1219I	1219I	1219I
Quantitation Factor	1	1	1	1
Cadmium (SW6010)				
Cadmium, mg/l	<0.0050	<0.0050	<0.0050	<0.0050
Dilution Factor	1	1	1	1
Prep Date	12.19.01	12.19.01	12.19.01	12.19.01
Analysis Date	12.20.01	12.20.01	12.20.01	12.20.01
Batch ID	1219I	1219I	1219I	1219I
Quantitation Factor	1	1	1	1

SEVERN
TRENT
SERVICES

5102 LaRoche Avenue • Savannah, GA 31404 • Tel: 912 354 7858 • Fax: 912 352 0165 • www.stl-inc.com

STL Savannah

LOG NO: S1-18143
Received: 14 DEC 01
Reported: 02 JAN 02

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client
Code: 10192014

REPORT OF RESULTS

DATE /

TIME SAMPLED SDG#

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE /	TIME SAMPLED	SDG#
18143-1	GMMW116D (12/13/01)	12-13-01/08:36	NL013	
18143-2	GMMW116S (12/13/01)	12-13-01/09:00	NL013	
18143-3	GMMW125 (12/13/01)	12-13-01/09:39	NL013	
18143-4	MW-104 (12/13/01)	12-13-01/10:29	NL013	
18143-5	MW-107S (12/13/01)	12-13-01/11:16	NL013	

PARAMETER	18143-1	18143-2	18143-3	18143-4	18143-5
Zinc (SW6010)					
Zinc, mg/l	<0.020	<0.020	<0.020	<0.020	<0.020
Dilution Factor	1	1	1	1	1
Prep Date	12.19.01	12.19.01	12.19.01	12.19.01	12.19.01
Analysis Date	12.20.01	12.20.01	12.20.01	12.20.01	12.20.01
Batch ID	1219I	1219I	1219I	1219I	1219I
Quantitation Factor	1	1	1	1	1

LOG NO: S1-18143
Received: 14 DEC 01
Reported: 02 JAN 02

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client
Code: 10192014

REPORT OF RESULTS

Page 3

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/	TIME SAMPLED	SDG#
18143-6	MW-107D (12/13/01)	12-13-01/11:48	NL013	
18143-7	MW-106D (12/13/01)	12-13-01/12:30	NL013	
18143-8	MW-105D (12/13/01)	12-13-01/13:24	NL013	
PARAMETER		18143-6	18143-7	18143-8
Lead (SW6010)				
Lead, mg/l	<0.0050	<0.0050	<0.0050	
Dilution Factor	1	1	1	
Prep Date	12.19.01	12.19.01	12.19.01	
Analysis Date	12.20.01	12.20.01	12.20.01	
Batch ID	1219I	1219I	1219I	
Quantitation Factor	1	1	1	
Cadmium (SW6010)				
Cadmium, mg/l	<0.0050	<0.0050	<0.0050	
Dilution Factor	1	1	1	
Prep Date	12.19.01	12.19.01	12.19.01	
Analysis Date	12.20.01	12.20.01	12.20.01	
Batch ID	1219I	1219I	1219I	
Quantitation Factor	1	1	1	
Zinc (SW6010)				
Zinc, mg/l	<0.020	<0.020	<0.020	
Dilution Factor	1	1	1	
Prep Date	12.19.01	12.19.01	12.19.01	
Analysis Date	12.20.01	12.20.01	12.20.01	
Batch ID	1219I	1219I	1219I	
Quantitation Factor	1	1	1	

STL Savannah

LOG NO: S1-18143
Received: 14 DEC 01
Reported: 02 JAN 02

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client
Code: 10192014

REPORT OF RESULTS

DATE/

Page 4

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	TIME SAMPLED	SDG#
18143-9	Method Blank		NL013
18143-10	Lab Control Standard & Recovery		NL013
18143-11	LCS Accuracy Control Limit (%R)		NL013
18143-12	Lab Control Standard Result		NL013
18143-13	Spike Amount Added, LCS		NL013

PARAMETER	18143-9	18143-10	18143-11	18143-12	18143-13
-----------	---------	----------	----------	----------	----------

Lead (SW6010)					
Lead, mg/l	<0.0050	102 %	75-125 %	0.508	0.500
Dilution Factor	1	1	---	1	---
Prep Date	12.19.01	12.19.01	---	12.19.01	---
Analysis Date	12.20.01	12.20.01	---	12.20.01	---
Batch ID	1219I	1219I	---	1219I	---
Quantitation Factor	1	1	---	1	---

Cadmium (SW6010)					
Cadmium, mg/l	<0.0050	101 %	75-125 %	0.0507	0.0500
Dilution Factor	1	1	---	1	---
Prep Date	12.19.01	12.19.01	---	12.19.01	---
Analysis Date	12.20.01	12.20.01	---	12.20.01	---
Batch ID	1219I	1219I	---	1219I	---
Quantitation Factor	1	1	---	1	---

SEVERN
TRENT
SERVICES

5102 LaRoche Avenue • Savannah, GA 31404 • Tel: 912 354 7858 • Fax: 912 352 0165 • www.stl-inc.com

STL Savannah

LOG NO: S1-18143
Received: 14 DEC 01
Reported: 02 JAN 02

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client
Code: 10192014

REPORT OF RESULTS

Page 5

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/	TIME SAMPLED	SDG#
18143-9	Method Blank			NL013
18143-10	Lab Control Standard % Recovery			NL013
18143-11	LCS Accuracy Control Limit (%R)			NL013
18143-12	Lab Control Standard Result			NL013
18143-13	Spike Amount Added, LCS			NL013
PARAMETER	18143-9	18143-10	18143-11	18143-12
Zinc (SW6010)				18143-13
Zinc, mg/l	<0.020	93 %	75-125 %	0.463
Dilution Factor	1	1	---	1
Prep Date	12.19.01	12.19.01	---	12.19.01
Analysis Date	12.20.01	12.20.01	---	12.20.01
Batch ID	1219I	1219I	---	1219I
Quantitation Factor	1	1	---	1

STL Savannah

LOG NO: S1-18143
Received: 14 DEC 01
Reported: 02 JAN 02

Mr. Jack Kratzmeyer
ARCADIS Geraghty & Miller, Inc.
35 E. Wacker Dr., Suite 1000
Chicago, IL 60601

Requisition: CI001003.0003.00003

Project: NL Industries-Taracorp Superfund Site
Sampled By: Client
Code: 10192014

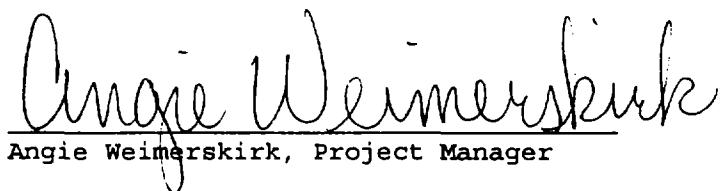
REPORT OF RESULTS

Page 6

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	TIME SAMPLED	SDG#
18143-14	Reporting Limit (RL)		NL013
18143-15	Method Detection Limit (MDL)		NL013
PARAMETER		18143-14	18143-15
Lead (SW6010)		0.0050	0.0015
Lead, mg/l			
Cadmium (SW6010)		0.0050	0.00071
Cadmium, mg/l			
Zinc (SW6010)		0.020	0.0059
Zinc, mg/l			

SW-846, Test Methods for Evaluating Solid Waste, Third Edition,
September 1986, and Updates I, II, IIA, IIB, and III.

These test results meet all the requirements of NELAC. All questions
regarding this test report should be directed to the STL project manager
who signed this test report.



Angie Weimerskirk

Angie Weimerskirk, Project Manager

Final Page Of Report



Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 1 of 1Project Number/Name CT_001003.0001/VL IndustriesProject Location Granite City, ILLaboratory STL - SavannahProject Manager Jack KrentzmeierSampler(s)/Affiliation E. Mooseburger & S. Vases

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE		Total	Remarks
GMMW-116D(12.13.01)	L	12.13.01 / 8:36	-			1	
GMMW-116S(12.13.01)			9:30	-		1	
GMMW-125(12.13.01)			9:39	-		1	
MW-104 (12.13.01)			10:29	-		1	
MW-107S (12.13.01)			11:16	-		1	
MW-107D (12.13.01)			11:48	-		1	
MW-106D (12.13.01)			12:36	-		1	
MW-105D(12.13.01)	L		13:24	-		1	

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by:	<u>Jack Krentzmeier</u>	Organization: <u>ARCADIS G+M</u>	Date <u>12/13/01</u>	Time <u>14:00</u>	Seal Intact?		
Received by:	<u>B. Martin</u>	Organization: <u>STL Sav</u>	Date <u>12/14/01</u>	Time <u>10:00</u>	Yes No N/A		
Relinquished by:		Organization: _____	Date _____	Time _____	Seal Intact?		
Received by:		Organization: _____	Date _____	Time _____	Yes No N/A		
Special Instructions/Remarks:	<u>Questions: Jack Krentzmeier 312/263-6703</u>						

Delivery Method: In Person Common Carrier Fed Ex Lab Courier Other _____

SPECIFY _____

AG 05 0597

FedEx. USA Airbill

Express

FedEx
Tracking
Number

832528867430

1 From This portion can be removed for Recipient's records.

Date 12.13.2001 FedEx Tracking Number

832528867430

Sender's Name Eric Moosbrugger

Phone 312 263-6703

Company ARCADIS GERAGHTY & MILLER INC

Address 35 E WACKER DR STE 1000

Dept/Room/Suite/Room

City CHICAGO State IL ZIP 60601

RECIPIENT: PEEL HERE

2 Your Internal Billing Reference

3 To
Recipient's Name

Phone 912 354-7858

Company STL Savannah

Address 5102 La Roche Ave

To "HOLD" at FedEx location, print FedEx address.

We cannot deliver to P.O. boxes or P.O. ZIP codes.

City Savannah

State GA

ZIP 31404

Dept/Room/Suite/Room



0199355060

Recipient's Copy

Packaged up to 150 lbs.
Delivery confirmation may be later in some areas.

FedEx Priority Overnight
Next business morning

FedEx Standard Overnight
Next business afternoon

FedEx First Overnight
Earlier next business morning
delivery to select locations

NEW FedEx Extra Hours
Later drop-off with next business
afternoon delivery for select locations

Packages over 150 lbs.
Delivery confirmation may be later in some areas.

FedEx 1 Day Freight
Next business day

FedEx 2 Day Freight
Second business day

FedEx 3 Day Freight
Third business day

4a Express Package Service

FedEx Priority Overnight
Next business morning

FedEx Standard Overnight
Next business afternoon

FedEx First Overnight
Earlier next business morning
delivery to select locations

4b Express Freight Service

FedEx 1 Day Freight
Next business day

FedEx 2 Day Freight
Second business day

FedEx 3 Day Freight
Third business day

Call for Confirmation:

5 Packaging

FedEx Envelope

FedEx Pak*
Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak

Other Pkg.
Includes FedEx Box, FedEx Tubes, and customer pgs.

6 Special Handling

SATURDAY Delivery

HOLD Weekday
at FedEx Location
Not available for FedEx First Overnight

HOLD Saturday
at FedEx Location
Available only for FedEx Priority Overnight and FedEx 2 Day to select locations

Does this shipment contain dangerous goods?

No

Yes
Dry Ice attached
Shipper's Declaration
not required

Dry Ice
Dry Ice & UN 1845

Dangerous Goods Info: Dry ice cannot be shipped in FedEx packaging or with FedEx Extra Hours service.

7 Payment Bill to:

Sender
Add'l. Acct. No. in Section
I will be paid.

Recipient

Third Party

Credit Card

Cash/Check

Total Packages

Total Weight

Total Charges

Our liability is limited to \$100 unless you declare a higher value. See the FedEx Service Guide for details.

8 Release Signature

Sign to authorize delivery without obtaining signature.

By signing you authorize us to deliver this shipment without obtaining a signature
and agree to indemnify and hold us harmless from any resulting claims.

Questions? Visit our Web site at fedex.com

or call 1-800-Go-FedEx® 800 463-3339.

Rev Date 7/81 • Part #15725G • ©1994-2001 FedEx • PRINTED IN U.S.A. GBFE 10/01

447

Credit Card Auth

CACDIS

Appendix C

Data Validation Memorandum

MEMO

ARCADIS
Ste 1000, 35 E. Wacker Dr.,
Chicago, IL 60601
Tel 312-263-6703
Fax 312-263-7897

To:
Jack Kratzmeyer

Copies:

ENVIRONMENTAL

From:
P. T. Srinivasan

Date:
February 06, 2002

Subject:

Inorganic Data Validation of Groundwater Samples Collected (during December 2001) from the NL Industries, Taracorp Site, Granite City, Illinois.
CI001003.0003.00004

DATA VALIDATION

During the first annual groundwater sampling event at the NL Industries, Taracorp Site, Granite City, Illinois, thirty three groundwater samples were collected from December 10, 2001 to December 13, 2001.

Quality Control (QC) samples collected during the sampling event consisted of two field blanks, two duplicates, one matrix spike (MS) and one matrix spike duplicate (MSD). All samples were collected as low-flow unfiltered (LFU) samples using a peristaltic pump. All samples were sent to the Severn Trent Laboratory (STL), located in Savannah, Georgia for analysis. Twenty-six samples were analyzed for target analyte list (TAL) metals consisting of total lead, cadmium and zinc. Seven additional samples were analyzed for only total lead. Samples were analyzed for TAL metals using the standard United States Environmental Protection Agency (USEPA) Method 6010. A limited data validation was performed following the general guidelines established in the individual USEPA Methods used and the quality assurance/quality control (QA/QC) criteria prescribed in the USEPA National Functional Guidelines for Inorganic Data Review, dated February 1994. ARCADIS received four data packages from the laboratory, which were designated in two sample delivery group numbers (SDG #), namely SDG # NL012 and SDG # NL013.

All four STL data packages were reviewed for completeness and technical compliance in accordance with the USEPA National Functional Guidelines for Inorganic Data Review referenced above. The review of the data packages included the following checking points:

- Chain-of-custody forms.
- Holding times.
- Blank contamination (method and field).
- Field duplicates results.
- Laboratory control samples (LCS).
- Matrix spike/matrix spike duplicate.
- Groundwater sample logs.

The attached documents (Attachment 1) show a check- list for the above criteria as part of level II data validation. The data were found to be of acceptable quality. Based on the data review, there is no qualification required to the data. The following observations are noted by SDG. Only non-conformance issues and deviations, if any, are discussed below.

SDG: NL012

1. Five groundwater samples were collected on December 10, 2001. Fifteen groundwater samples including Matrix spike/matrix spike duplicate (MS/MSD) and field duplicates were collected on December 11, 2001. All samples were analyzed for total lead, cadmium and zinc.
2. Field duplicate was collected for MW- 101- (12/11/01) and labeled as MW- 101- DUP (12/11/01). The sample and duplicate results were comparable and the relative percentage difference (RPD) falls below 20% as established by the laboratory.
3. A method blank was analyzed with each batch of groundwater samples. No contamination was detected.
4. Field blanks collected on December 11, 2001 and analyzed with groundwater samples did not demonstrate any contamination.
5. A laboratory control sample (LCS) was analyzed with each batch for the metals lead, cadmium and zinc. All percent recovery values fall within the laboratory established control limits (75-125%).

6. MS/MSD analysis was performed using samples GMMW-123-MS and GMMW-123-MSD for the trace metals (lead, cadmium and zinc). All percent recovery and relative percent difference values were within the laboratory established control limits.
7. All other criteria evaluated were found to be acceptable.

SDG: NL013

1. Eleven groundwater samples (including a field blank and duplicate) were collected on December 12, 2001. Three samples were analyzed for total lead, cadmium and zinc. All other samples were analyzed for total lead only. Eight groundwater samples were collected on December 13, 2001 and analyzed for total lead, cadmium and zinc.
2. Field duplicate was collected for GMMW118.(12/12/01) and labeled as GMMW118. DUPLICATE. (12/12/01). The sample and duplicate results were comparable and the relative percentage difference falls below 20% as established by the laboratory.
3. A method blank was analyzed with each batch of groundwater samples. No contamination was detected.
4. Field blanks collected on December 12, 2001 and analyzed with the groundwater samples did not demonstrate any contamination.
5. An LCS was analyzed with each batch for the metals lead, cadmium and zinc. All percent recovery values fall within the laboratory established control limits (75-125%).
6. All other criteria evaluated were found to be acceptable.